

CASE STUDIES IN THE NURSING MANAGEMENT OF
URINARY INCONTINENCE IN CONFUSED,
ELDERLY PATIENTS

by

MARGARET JOAN ANDERSON, B.A. (Hons. Open), R.G.N.

Thesis presented in fulfilment of the requirements for the
degree of Doctor of Philosophy

University of Edinburgh

1991



Whether . . . in hospitals or in the community, working as part of a team or alone, whether they are tending the physically sick, the mentally ill, or the mentally handicapped, whether they are counselling young mothers or elderly people, whether they are nursing neonates or tending the dying, their central role is to ensure the care and comfort of the person being nursed, to maintain oversight and co-ordination of that care and to integrate the whole into an appropriate social context.

Report of the Committee on Nursing, 1972

CONTENTS

	Page
Abstract	vi
Declaration	viii
Acknowledgements	ix
List of Figures	xi
List of Tables	xii
 <u>CHAPTER ONE: GENERAL INTRODUCTION</u>	
THE PROBLEM OF URINARY INCONTINENCE	2
THE COSTS OF INCONTINENCE	3
THE RESPONSIBILITY OF NURSING	4
COMPLEXITIES OF LONG-TERM CARE: A NURSING PERSPECTIVE	5
BEHAVIOURAL APPROACHES	10
CONCLUSIONS	10
PURPOSE OF THE STUDY	12
RESEARCH QUESTIONS	12
DEFINITION OF TERMS	13
 <u>CHAPTER TWO: CONCEPTUAL AND THEORETICAL FRAMEWORK</u>	
INTRODUCTION	17
NORMAL AGEING	19
Introduction	19
Measuring Age-related Changes	20
Changes associated with the Process of Ageing	21
Sensory losses	21
Motor changes	21
Other changes	22
Intellectual change	22
Global measurements of intellectual change	23

	Page
Selective Cognitive Function: Information Processing and Memory	24
Information processing	24
Memory	24
Psychosocial adaptation and adjustment	25
Coping and adaptation	26
Summary	27
DEMENTIA	28
Introduction	28
Pathophysiology	30
Biomedical Changes	32
Definition and Classification	32
Causes of Dementia	35
Senile Dementia (Alzheimer's type)	35
Changes associated with Senile Dementia (Alzheimer's type)	36
Vascular or Multi-Infarct Dementia	37
Prevalence of Dementia	39
Institutional Care	42
Behavioural Aspects of Dementia	45
Summary	48
URINARY INCONTINENCE	49
Introduction	49
Pathophysiology of the Urinary Bladder	49
The Normal Bladder	51
Continenence of Urine	52
Definitional Issues	53
Classification	55
Summary	56
INVESTIGATIONS INTO URINARY INCONTINENCE IN THE ELDERLY	56
Introduction	56
Epidemiological Studies	57
Introduction	57
General population studies	57
Prevalence of urinary incontinence in residential homes	62
Prevalence of urinary incontinence in the hospitalised elderly	64
Summary	67
Clinical Investigations: Urodynamic Studies	71
Introduction	71
Cystometry	71
Terms used in cystometry	72
Cystometric studies in the elderly	73
Algorithms	83
Summary	86

	Page
CLINICAL AND FUNCTIONAL CORRELATES OF URINARY INCONTINENCE	87
Summary	89
THERAPEUTIC OPTIONS	89
Introduction	89
Drugs used in the Treatment of Urinary Incontinence	90
Drugs that may precipitate Urinary Incontinence	91
Summary	94
Behavioural Approaches	94
Introduction	94
Environment and behaviour	99
Prompted voiding	104
Summary	106
PSYCHOLOGICAL APPROACHES TO UNDERSTANDING BEHAVIOUR	106
Introduction	106
Behaviour	107
Introduction	107
Classical conditioning	107
Operant conditioning	108
Behaviour modification	109
Critique of an approach based on operant conditioning	111
Alternative perspectives: the contextual model of behaviour	113
Summary	114
Environmental Psychology	115
Introduction	115
Person-environmental relations:	
- transaction	116
- individual competence and environmental press	117
- a dialectical perspective	121
Summary	127
THE DEVELOPMENT OF KNOWLEDGE	129
Introduction	129
Development of Knowledge in Nursing	131
Images of Nursing	134
The Concept of Environment	137
The Concept of Person	139
Summary	140
The Theory-Practice Gap	141
Summary	144
SUMMARY OF THE THEORETICAL FRAMEWORK	147

CHAPTER THREE: STUDY DESIGN AND METHODS

STUDY DESIGN	150
Case Studies	152
Action Research	153
Single Case Experimental Studies	155
STUDY METHODS	156
Observations	156
Questioning	157
Survey of Urinary Incontinence	157
Single Case Experimental Studies	158
Signposting	159
Prompted Voiding	159
Instruments	160
Negotiating Access to the Study Sites	162
Negotiating the Role of Participant Observer	165
DATA COLLECTION, RECORDING AND STORAGE	165
Coding the Data	167
Data Analysis	167
Limitations of the Study	168

CHAPTER FOUR: STUDY FINDINGS AND DISCUSSION

THE PRELIMINARY STUDIES	170
Introduction	170
Ward A	170
The environment of care	170
The patients' day	172
The nurses' perspective	173
Toileting	176
Urinary incontinence	176
Survey of urinary incontinence	177
Ward B	179
The environment of care	179
The patients' day	180
The nurses' perspective	181
Toileting	182
Urinary incontinence	182
Survey of urinary incontinence	183
Princess House	184
The environment of care	184
The residents' day	185
The care workers' perspective	186
Toileting	187
Urinary incontinence	187
Survey of urinary incontinence	189

	Page
Summary of Preliminary Studies	190
Approaches to the management of urinary incontinence	191
The effect of organisational style	192
 THE MAIN STUDIES	 195
Cockburn House	195
The environment of care	195
The residents' day	196
The care workers' perspective	197
Toileting	198
Urinary incontinence	199
Survey of urinary incontinence	199
Single case experimental studies	200
Findings	202
Summary	206
 Ward C	 209
The environment of care	210
The patients' day	212
The nurses' perspective	213
Toileting	215
Urinary incontinence	215
Survey of urinary incontinence	216
Single case experimental studies	217
Findings	219
Summary	222
 Action Research	 223
Mediating and developing new networks	225
Reframing the problem through sharing knowledge not otherwise available	226
Adapting the physical environment: creating a special environment conducive to learning	226
Primary nursing: giving support during the process of change	228
 Summary of the Main Studies	 229
 CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS	 243
 Bibliography and References	 253
 Appendices	

Abstract

The nursing care of the confused, elderly patient suffering from urinary incontinence (UI) is poorly understood. The objectives of a study to examine the complex relationships between patient characteristics, the social and physical environment and the organisation of nursing care were to: (i) explore the ways in which nursing staff approached the problem of UI in the confused, elderly patient; (ii) examine the effect of the organisation of care on the management of UI; and (iii) examine the application of principles derived from behavioural psychology to nursing practice.

As the issues are complex, an extensive review of literature in four fields was undertaken. Biomedical explanations of UI and the nature of the dementing illnesses were examined and it was concluded that evidence of an environmental component in UI was probable. Models derived from behavioural psychology were found to be inadequate to understand behavioural problems associated with a dementing illness. A contextual-dialectic framework was proposed which provided also the rationale for the study design and research methods. A combination of action-science research using case studies and single case experimental studies provided the best means of exploring the issues and was consistent with evolving thinking in nursing in which the role of the nurse is to facilitate the interaction between person and environment. Two main propositions stated that (i) under the conditions of a routine geriatric model of nursing care, the level of UI in a ward would be high; and (ii) under the conditions of an intervention model in which the nurse sought to manage the interaction between person and environment, levels of UI would be reduced.

Comparisons from preliminary studies in two psychogeriatric wards and one residential home provided insights that were applied in two main studies. By using the concept of accident to categorise UI as fundamental, predisposing and precipitating factors, two frames of reference, the biological and the social, were linked. Staff were encouraged to reframe the problem of UI through this

perspective and to assist in the development and testing of nursing interventions. In a residential home, the legibility of the environment was improved by the use of signposts as recommended by the Department of Health, on the assumption that this would reduce episodes of UI by making toilets easier to locate. Rapid and marked improvement was shown in one of four cases over a period of four weeks following a programme of guided orientation. In a psychogeriatric ward, systematic and sustained interaction between nurse and patient was improved when the organisation of nursing was altered to limit the number of nurses caring for a small group of elderly, incontinent men. Systematic and sustained interaction was improved by alterations in the arrangement of furniture and facilitated prompted voiding. The findings showed a reduction in UI of one third of the baseline figure and an increased appropriate use of the toilet. It was concluded that, to be effective, an intervention like prompted voiding requires a shift from a routine, geriatric model of care to an interventionist model inherent in a process of systematic nursing organised in an integrated code of primary nursing practice. Although nurses are exhorted to adopt a patient-centred and individualised approach to patient care, in practice a powerful conflict exists in caring for an individual in a collective and congregate setting that can be countered only by overt strategies. It was concluded that, while alterations in the environment were necessary, these were insufficient alone to affect UI in the confused, elderly patient and that the active presence of a nurse was required. Recommendations for nursing management, education, practice and research are made.

I hereby declare that the work reported in this thesis was composed and conducted by myself. None of the work included has been submitted for publication nor in support of another degree or professional qualification.

Margaret J. Anderson

December, 1990

Acknowledgements

The development, writing and presentation of a thesis is accomplished only with help and support from many sources. The University of Edinburgh is blessed with staff in its academic and non-academic departments who give freely of their time and expertise. I wish to thank in particular Professor Penny Proffit, RN, BSN, MSN, DNSc, PhD, who has given freely of her time, knowledge and experience of nursing. I have valued her encouragement to read deeply and extensively, and for creating for me space to explore the world of nursing. Emeritus Professor Annie Altschul, CBE, BA, MSc, RGN, RMN, RNT, FRCN, started me on a long journey and made me realise that the answers to many of the problems in nursing lie, not in a textbook, but in the wards where nurses carry out the work of caring for others. Dr C.J. Gilleard, BSc, MSc, PhD, who introduced me to the fascinating world of psychology as it applies to the elderly, was most helpful. I valued his interest and support until his departure for Turkey. The Scottish Home and Health Department, through its Nursing Research Training Fellowship scheme, provided financial support which is acknowledged with gratitude. Dr Margaret Clark, Nursing Officer (Research) has been a source of great support and encouragement over the years.

Miss Esther Reid, whose pioneering work was in a similar field, was of enormous help in clarifying ideas. Her interest in this work has been appreciated.

The staff and students of the Nursing Research Unit and the Department of Nursing Studies, University of Edinburgh, made me welcome, and I will long remember with affection the many friends whom I have made there.

Mrs Lynne Dyer, secretary extraordinaire, has been a good friend and has provided tea and cakes as needed. She has also deciphered my handwriting and coped, with aplomb, with cryptic instructions, always turning out an immaculate product. Circumstances prevented Lynne from finishing the final draft, but then I would not have met

Ms May Norquay. Ms Norquay completed an arduous task in record time, overcoming many obstacles. I am grateful for her knowledge, experience and sheer professionalism which have contributed so much to the final draft.

My family and sundry animals kept my feet firmly on the ground. I have learned much about research-mindedness from my husband, my favourite role model, who persuaded me that description comes before statistics.

Nothing, however, would have been possible without the interest and cooperation of the staff, patients and residents of the many wards and homes that made me welcome in their busy lives. They are at the very heart of this study and I hope they will find it useful and worthwhile.

LIST OF FIGURES

Figure		Page
1	Classification of the dementias, following Roth (UK) and Clayton and Martin (USA)	34
2	Studies of the prevalence of moderate-severe dementia in the United Kingdom	41
3	Brain - spinal cord - bladder mechanism	50
4	Person-environment relations: transaction	118
5	Dimensions of the dialectic between person and environment	122
6	Attributes of environment relevant to competent functioning in elderly persons	126
7	Representation of Parr's (1980) four-component model of person-environment relations	127
8	Representation of conceptual framework of the study	148
9	Representation of study design	155
10	Concept of accident as related to urinary incontinence: predisposing and precipitating factors	188
11	Average number of episodes of urinary incontinence in four cases during baseline (A) and intervention (B) conducted in a residential home over a period of five weeks	207
12	Representation of ward layout	211
13	Average number of episodes of urinary incontinence in three cases during baseline (A) and intervention (B) conducted in a psychogeriatric ward over a period of nine weeks	220
14	Concept of accident as related to urinary incontinence showing locus of nursing intervention	227

LIST OF TABLES

Table		Page
1	Percentage of all residents suffering from senile dementia in psychiatric hospitals, by gender and age-decile	43
2	Distribution of subjects (a) by age and sex and (b) by reported incontinence (Yarnell and St Leger, 1979)	58
3	Distribution of subjects (a) by age and sex and (b) by reported incontinence (Thomas <u>et al.</u> , 1980)	60
4	Distribution of subjects (a) by age and sex and (b) by reported incontinence (Campbell <u>et al.</u> , 1985)	61
5	Comparison of studies of prevalence of urinary incontinence in the general population	63
6	Prevalence of urinary incontinence in local authority homes (1972-82)	65
7	Summary of studies of urinary incontinence in hospitalised, elderly patients	66
8	Studies of prevalence of urinary incontinence in the general population, residential homes and in hospital	68-9
9	Classification of urinary incontinence by symptom and type of dysfunction	75
10	Source of referral of subjects	77
11	Conditions associated with bladder dysfunction	78
12	Result of interventions to promote continence	79
13	Cystometric index of bladder instability	85
14	Effects of three groups of phenothiazine derivatives	93
15	Episodes of urinary incontinence, by number of episodes per patient per day, Ward A	178
16	Episodes of urinary incontinence, by number of episodes per patient per day, Ward B	184

Table		Page
17	Episodes of urinary incontinence, by number of episodes per patient per day, Princess House	190
18	Comparison of number of episodes of urinary incontinence, by ward/home	193
19	Episodes of urinary incontinence by number of episodes per day per patient, Cockburn House	200
20	Episodes of urinary incontinence, by number of episodes per patient per day, Ward C	216
21	Comparison of daytime episodes of urinary incontinence by number of patients in three NHS wards and two residential homes and by frequency of occurrence per week	232

CHAPTER ONE

GENERAL INTRODUCTION

It is the mark of an educated man to look for just as much precision in the enquiry as the nature of the subject allows.

(Aristotle, Ethics, I.3)

In the early development of this study several days were spent working with nursing staff in psychogeriatric wards of a local hospital. In some wards nurses spoke with feeling of the amount of time taken up with toileting and changing incontinent patients, but in others, nurses denied the existence of a problem despite the fact that dirty linen was piled up in the morning and inordinate amounts of staff time were spent in sorting through clean clothes. Few of the nurses encountered during this brief spell could give the exact number of patients in the ward who were incontinent of urine, though statements were often qualified with an 'it all depends what you mean by . . . ' remark:

Mr B . . . can manage if you point him in the right
direction (nursing auxiliary, male ward)

Mrs C . . . is not really incontinent if you get to her in
time (sister, female ward)

Distressed patients were comforted and reassured that the episode of incontinence was 'just an accident'. But accidents don't 'just happen'. Baldamus (1961), an American sociologist, studied accidents in industry and showed that these had fundamental causes: predisposing and precipitating factors. Could this grounded insight provide a fresh way of looking at a perennial problem?

An enrolled nurse explained the dilemma faced by nurses when he asked how a nurse could tell those days when a frail patient could manage a simple aspect of self care unaided: "Some days they manage just fine, or with a wee bit of help, but on others they can't do anything at all" (enrolled nurse, male ward). The conflict for the nurses lay in the fact that, if help was given when not absolutely necessary, they were accused of fostering dependence, but if help was not available when needed, they could be accused of malpractice. This observation seems to be paraphrasing comments made by Wells (1980:130) who describes the major constraints to geriatric nursing as a failure of the nursing profession "to define, describe, teach and facilitate nursing", and recommends that nurse researchers explore the process of nursing.

From this background stems this writer's commitment to, and preoccupation with, a greater understanding of the practice of nursing, its planning and delivery. The task, it seems, could be pursued in two ways. One could follow the example set by Norton et al. (1962) and Wells (1980) and explore the problems of geriatric nursing in a broad way, but this gives little insight into how, and if, problems are resolved: a more dynamic approach seems to be needed. A second approach, commended by Parr (1980) as a means of understanding a complex system without destroying its functional integrity, is to select one kind of behaviour and look at the interactive influences on the occurrence and quality of that behaviour. The problem of urinary incontinence (UI) in continuing care wards and units seems to merit such an investigation.

THE PROBLEM OF URINARY INCONTINENCE

Levels of UI of between 40 and 80% have been recorded in British hospital studies (Milne, 1976; McLaren et al., 1981; Donaldson, 1984) and in studies in American nursing homes (Ouslander et al., 1982; Ramphal, 1987). A review of 12 consecutive annual visits conducted by the Health Advisory Service for England and Wales (HAS Annual Report, 1987) identifies the lack of effective management of UI as a persistent problem. Similarly, reports issued by the Scottish Hospital Advisory Service state that in some geriatric and psychogeriatric wards only basic care was provided (Health in Scotland, 1984, 1985). Nor is the problem confined to the hospital setting. Though estimates vary, up to one person in every five resident in local authority or voluntary homes for the elderly is believed to suffer from UI (Gilleard, 1981).

The problem of UI is well documented. In 1978 a monograph published by the Royal College of Nursing entitled, The Elderly: A

Challenge to Nursing, acknowledges the existence of a problem, and a programme designed to raise the awareness of nurses and to provide information was begun in a series of study days organised in conjunction with the British Geriatric Society. A bibliography of research literature compiled by the Disabled Living Foundation (1981) shows more than 1,000 entries, most of which deal with aspects of pathophysiology of the urinary bladder, with only a few entries considering the problem as it affects the elderly. Subsequently, the King's Fund Centre, in conjunction with the Disabled Living Foundation and the International Continence Society, published two further pamphlets entitled, The Problem of Incontinence (1982) and Action on Incontinence (1983) in which UI is recognised as a problem affecting all age groups. Around that time interest was growing in the institutional care of old people suffering from a dementing illness where the problem of UI was associated with the design of the environment (Alexander and Elton, 1979; Millard, 1979; Gilleard, 1980, 1981; McLaren et al., 1981). Although not fully identified, an environmental component in UI has been established (Arie et al., 1976). Increasingly, it seemed recognition was being given to the existence of a multifactorial problem.

THE COSTS OF INCONTINENCE

The economic costs of urinary and faecal incontinence to the health services of England and Wales were estimated to be several million pounds each year (Willington, 1976); in one district health authority in England the annual cost was found to be £270,000 (Townsend, 1988) while in the United States 'first-order' costs were \$3-\$11 per day, giving an annual cost of between \$0.5 and \$1.5 billion (Ouslander and Kane, 1984; Schnelle et al., 1988).

In terms of that scarce resource - nursing time - coping with UI has been found to be the single most time-consuming activity in

the nursing day (Norton et al., 1962; Wells, 1980). The consequences of UI entail costs of other kinds: potential skin breakdown, unpleasant odours and damage to clothing and furnishings have been noted, and significant established UI has been correlated with poor prospects of survival (Goldfarb et al., 1966; Dontas et al., 1981; Warren and Knight, 1982). Although the problem of UI is well documented (Royal College of Nursing/British Geriatric Society, 1975; King's Fund/Disabled Living Foundation, 1981, 1983), this remains one of the most intractable problems in the institutional care of old people and of major concern to the discipline of nursing.

THE RESPONSIBILITY OF NURSING

The World Health Organisation (1976:9) states that: ". . . the discipline of nursing has a responsibility to plan, provide and evaluate the care programme and to initiate and conduct research leading to the provision of better services". But, in a review of 12 annual visits made by the Health Advisory Service of England and Wales, the lack of effective management of UI is identified as a persistent problem (Annual Report, 1987).

Concerns have been expressed also by the Scottish Hospitals Advisory Service (1984, 1985) whose reports make clear that progress in the development of services and of philosophies of patient-centred care has been slow. Though not addressing this issue directly, previous investigations into the nursing care of elderly patients, while recommending individualised and patient-centred care, have illustrated complex interactions and interrelationships that cannot be easily dismissed (Baker, 1978; Miller, 1978; Wells, 1980).

COMPLEXITIES OF LONG-TERM CARE: A NURSING PERSPECTIVE

From a nursing perspective, Norton et al. (1962) were the first to draw attention to the role of environmental factors. Further studies by British nurse researchers exploring problems and issues in long-term care of old people shed light onto a range of factors that contributed to the situation. In long-term care wards Wells (1980) found 80% of the ward populations needed help with washing and dressing but the single most time-consuming actions were related to the care of the incontinent patients. Nurses were found to accept UI with passivity, as an inevitable consequence of their work with elderly people. Like Norton et al. (1962), Wells (1980) considered the environment of care to be unsatisfactory, but more important, nurses were found to be prepared neither educationally nor psychologically to be critical of their work, and lacked the understanding and knowledge to consider the complexities in the provision of good nursing care and to promote change. The major problem in hospital care of the elderly was attributed to the organisation and delivery of nursing care rather than to constraints imposed by the environment. Wells (1980:130) writes that: ". . . the real constraints to geriatric nursing exist in the nursing profession's failure to define, describe, teach and facilitate nursing".

Evaluating the quality of care in psychogeriatric wards, Miller (1978) found a chronic shortage of staff and poor resources allowed the provision of basic care only which served to legitimise a task orientation to work, facile categorisation of patients and an absence of meaningful staff/patient interaction. As a result, patients became depersonalised objects with low self-esteem and little engagement with the immediate environment. The role of the care staff became one of excluding and 'disciplining' patients who, in turn, developed avoidance behaviour. To keep order, staff maintained a 'restricted' environment and became merely guardians of the orifices (p.61). What is needed, Miller (1978:148) concludes, is:

. . . an individual assessment of each patient so that, without destroying the patient's individuality, or denying his dependence, staff can provide a programme in which the patient can be helped to relate to his environment, to himself, and to his disability.

Since these studies were reported, a reappraisal of nursing practice was begun and is evident in moves away from task-oriented and toward patient-centred care. Although a systematic approach to planned patient care has been advocated by the Scottish National Nursing and Midwifery Consultative Committee (1976, 1981), a central, if understated, issue concerns the complexity of individualising care in the collective setting of a hospital ward. In concluding the Annual Report of the Hospital Advisory Service for England and Wales (1987:17), the Director reminds nurses that: "It is important for the future of nursing for nurses themselves to define much more clearly their contribution to patient care and the specific skills those contributions imply".

Baker (1978) considers that the high number of nursing auxiliaries in a ward team encourages a division of nursing care into basic and technical tasks. As basic tasks are assumed to require less skill, less skilled personnel can be employed to carry them out. Nursing auxiliaries were seen to emphasise a custodial function and to be poor at maintaining the self esteem of the old people. The ward norm that merited most approval was the ability to get through the work which was dictated by an anticipated deprivation of staff. A tendency for work to be geared to the production of visible signs, such as neatly made beds, was evident and led to the identification of short cuts, with an associated reluctance to accommodate delays arising from unforeseen circumstances, like going to the toilet. Priority in patient care was given to matters of safety, mainly the management of wandering. Consistent with the necessity to provide a minimal level of care in order to 'get through', the nurses arranged their work so that the job they had to do, and those who were the subject/object of the work, the patients, were manageable.

Indirectly, patient care was controlled by untrained nursing auxiliaries.

Baker (1978) identifies a conflict between what she terms a 'routine geriatric model of care' and the innovative, patient-centred approach recommended by the Royal College of Nursing in its document, Improving Geriatric Care (1975). The 'routine' approach to geriatric care was supported by the static nature of the ward and reinforced by the beliefs of nurse managers and the professional ideology of the medical staff. The needs of the patient become secondary to those of nurse managers and the medical staff, and the result is to keep the person less than whole through ". . . an undifferentiated distribution of impersonal basic care". Such structural factors, Baker (1978) argues, create a situation in which long-term care wards suffer relative deprivation which results in a practical and symbolic devaluation of geriatric nursing. Qualified nurses in long-term care wards were seen to be lacking in knowledge of ways of altering a system that allowed only routine and passive care, and by which they were trapped.

Norton et al. (1962), Baker (1978) and Wells (1980) identify as a problem some aspect of the care of the incontinent patient, a topic considered in more detail by Reid (1975) whose study aimed to establish the difficulties encountered by nurses at ward level in cleansing incontinent patients. Cleansing an incontinent patient is not an isolated event Reid (1975:164) states, but is: "enmeshed in a series of events which in turn makes the sequence almost impossible to pinpoint. A constellation of factors . . .", from the structure of the building, to a lack of staff, poor training and supervision and inadequate facilities contribute to the high incidence of urinary and faecal incontinence in many wards. Nursing care was carried out in the face of severe difficulties and was made worse by the physical characteristics of many patients: lifting, toileting and cleansing such patients made this very heavy work. Like Baker (1978), Reid (1975) found the level of in-service teaching given to nursing auxiliaries to be low. Nursing auxiliaries themselves felt training

in the care of the incontinent patient was uncalled for and, as a consequence, new recruits absorbed existing practice uncritically. It was an example of what Reid terms adaptive practice, which might solve the existing problem but which could lead to unintended consequences. Again like Baker (1978), Reid (1975) identifies the criterion of a good nurse as a good lifter who could lift alone and get through more work. Nurses' perceptions of the care of the incontinent patient were of a mundane task that could be done by any woman who had reared children. But, as Reid notes (1975:390), ". . . care is necessary in the training of staff and in control of the situation to maintain the integrity of the patient".

Unfortunately, geriatric and psychogeriatric nursing is seen by many individuals to involve 'just' basic nursing care, defined by Goddard (1953) as those nursing duties that originate in the physical needs of the patient arising from 'basic' or daily living requirements of an individual, irrespective of any disease from which he or she might be suffering. As basic nursing does not change, basic nursing practice has not changed (Reid, 1975:2). Reid (1975) asked what transformed a nursing task into a nursing procedure. Overtly the reasons given are related to motor skills and, on occasion, to patient safety. Covertly, however, technical nursing is identified with medical prescription and is accorded higher status by ascription. The question of the nature of a nursing intervention is unclear and remains problematic, yet this is a problem that must be addressed if geriatric and psychogeriatric nursing is to progress beyond 'just basic' nursing.

In identifying the major problems of geriatric nursing, the emphasis has shifted from a biomedical condition to the environment and situation of care. Studies focused solely on a biomedical condition or on a single behaviour may be too narrowly conceived to provide the kind of information needed to inform practice. Most prescriptions are based on a monocausal argument despite the evidence of a multifactorial process of interactions that encompass inner (biological) and outer (social and physical) dimensions. In psycho-

geriatric patients, most of whom suffer from short-term memory failure accompanied by spatial confusion, the simple act of identifying the toilet area may create a problem for the affected individual who may subsequently fail to recall previously given instructions. The importance of understanding the ways in which environmental factors interact with patient characteristics to influence behaviour has been recognised though meaningful ways of describing the environment are lacking (Parr, 1980).

More information is needed to explain the reported high levels of UI in long-term care wards. Is there a significant difference between wards? If so, how can this be explained? Is there a relationship between staffing levels, skill mix and the level of incontinence? Reid (1975), Baker (1978) and Miller (1978) comment on the skill mix in long-term care wards where the balance of staffing favoured untrained nursing auxiliaries. Baker finds them to be "indirectly controlling the wards", and Reid suggests that they used adaptive practice which could have unintended consequences. But what of the role of the professionally qualified nurse? What contribution does he or she make to the management of UI?

What is the effect of patient characteristics like confusion and immobility on ways in which nurses act to manage UI? How does the pattern of ward organisation affect the nursing management of UI? Studies by nurse researchers suggest that the problem may be linked to nurses' knowledge of interventions to manage incontinence or to promote incontinence (Reid, 1975); to the style of ward organisation (Baker, 1978; Miller, 1978); it may be rooted in nurses' perception of, and attitudes to, elderly patients (Baker, 1978); or to the nature of the nurse-patient interaction (Wells, 1980). Overall, these combine as aspects of the environment of care, and the problem may be associated with ways in which nurses manage the interaction between patient and environment, identified as a persistent concern of nurses since the days of Florence Nightingale (Donaldson and Crowley, 1978; Flaskerud and Halloran, 1980; Meleis, 1985).

BEHAVIOURAL APPROACHES

An interest in the interaction between person and environment is, of course, central to behavioural, particularly environmental, psychology. And behavioural approaches have been recommended though no evidence was found that showed any kind of goodness-of-fit with nursing practice. Since the 1960s, researchers, mostly psychologists, have applied the principles of behavioural psychology to the problem of UI in elderly patients in psychiatric hospitals (Grosicki, 1968; Pollock and Lieberman, 1974; Carpenter and Simon, 1960). The results have been inconclusive and disappointing, possibly because the populations under scrutiny have been examined only in relation to UI, with little discrimination according to age, differential diagnosis, physical impairment or cognitive status. Possibly the model of operant conditioning employed was too simplistic to address a problem that is complex and multifaceted. But possibly such models, derived from psychology, have simply been 'applied' to nursing practice. A body of informed nursing opinion (Johnson, 1968; Donaldson and Crowley, 1978; Stevens, 1979; Schrock, 1981) has stated firmly that, when knowledge is taken or borrowed from another discipline for the purpose of "defining nursing care and patterning nursing interventions" (Meleis, 1985:102), such knowledge must be integrated, synthesised and redefined within a nursing perspective (Crawford et al., 1979; Meleis, 1985). Such a redefinition is urgently required in relation to behavioural perspectives, particularly when only one from a complex constellation of factors is singled out.

CONCLUSIONS

The management of UI in confused, elderly patients, who may suffer also from multiple pathologies and functional limitations, is

poorly understood. Studies of disease processes, or of a single behaviour, may be too narrowly focused to provide the kind of information needed to inform nursing practice. While nurses readily accept that certain actions must take place if patients' problems are to be resolved, what to do and how to do it are often less clear (Grosicki, 1968). There is a need for studies that examine the complex relationships between the social and physical environment, patient characteristics and the organisation and delivery of patient care to clarify factors identified in earlier studies as contributing to the reported high levels of UI in continuing care wards and units (Norton *et al.*, 1962; Reid, 1975; Baker, 1978; Miller, 1978; Wells, 1980).

Although UI affects old people in the community as well as those in institutional care, this study will be concerned with its management in elderly, confused patients in a long-term care setting. The need for sensitive and intelligent care for confused old people in institutions has been acknowledged, and the discipline of nursing identified as having a special responsibility to plan and evaluate the delivery of care (World Health Organisation, 1983). If improvements are to be made in the care of psychogeriatric patients, description and clarification of factors identified as contributing to the prevalence of UI are needed.

As nurses remain the professional group most likely to encounter the incontinent patient in the institutional setting, research into the nursing aspects of treatment and management can be justified as the focus of investigations into fundamental clinical practice, and as a guide for nurses and clinical teachers and others involved in this area of care. Studies of this kind could advance not only an understanding of the nature of nursing interventions and the findings used to inform and enhance the practice of nursing, education and management, but would serve also to clarify theoretical assumptions and conflicts in the literature. The significance of this study lies in its relevance to nursing practice in an area where concerns

have been expressed about poor standards of care (Health Advisory Service, 1987).

PURPOSE OF THE STUDY

The purpose of the study was to examine the complex relationships between the social and physical environment, patient characteristics and the organisation and delivery of care to develop an understanding of how nurses manage UI in confused, elderly patients in institutional care, and to seek to develop a practical solution which staff could agree to implement. Specifically, the objectives of the study were to:

- explore ways in which nursing staff approached the problem of UI in elderly, confused people;
- examine the effect of the organisation of care on the management of UI;
- examine the application of principles derived from behavioural psychology to nursing practice.

RESEARCH QUESTIONS

1. How do nurses approach the problem of UI in confused, old people?
2. In what ways does the organisational style of the ward affect ways in which nurses approach the problem of UI?
3. What is the effect on UI of changes in the organisation and delivery of care?
4. What is the effect on UI of changes in the physical environment?
5. How can interventions derived from behavioural psychology be adapted and synthesised with nursing practice?
6. What is the role of the qualified nurse in the management of UI?

7. How can improvements be made in the nursing care of the confused old person suffering from UI?

DEFINITION OF TERMS

Nursing intervention: the literal meaning of the term 'intervention' is to come between, and some form of alteration is implied by the term. In health care terms, some form of planning is inferred, and planned interventions can be categorised as primary, secondary or tertiary, referring to preventive interventions, interventions associated with treatment or those associated with therapy or training. The term 'planned intervention' is used therefore to denote some form of service delivery associated with prevention, treatment, therapy or training based on normative values of what is desirable. Also implied is alteration, either as a deficit or excess of some kind to be remedied. A planned intervention can also take the form of substitution. As planned interventions are not always effective, an evaluation of effectiveness is required (Reese and Overton, 1980).

A planned nursing intervention is therefore a purposive nursing action based on the systematic assessment of an individual's needs for nursing care which is followed by an evaluation of the effectiveness of the nursing actions undertaken.

Urinary incontinence: according to the International Continence Society (1976), UI is a condition where involuntary loss of urine from the lower urinary tract causes a social or hygienic problem and is objectively demonstrable. For the purpose of this study, however, UI is defined as any loss of urine from the lower urinary tract in an inappropriate place or at an inappropriate time.

Confused, elderly person: according to Jeffrey and Saxby (1984: 259), a person labelled confused may show a combination of cognitive, emotional and behavioural disturbances which may be transient or long-lasting, situation specific or generalised. As well as imprecision in use, a diagnosis of confusion is based upon subjective feeling as well as objective observations (Wolanin and Phillips, 1981).

The term 'confusion' is used by nurses to describe a constellation of behaviours characterised by losses in cognitive abilities and in concentration (Wolanin and Phillips, 1981). Among the characteristics, identified by Gebbie and Lavin (1975) in the First National Conference on the Classification of Nursing Diagnosis, are inattention, inappropriate use of language, disruptive behaviour, non-compliance and failure to perform activities of daily living. Wolanin and Phillips (1981) are critical of the blanket inclusion of so many non-specific attributes and the neglect of a key factor, arguing that, of the 17 listed attributes, only three are specific to the confusional state. To disorientation to time, place, person, object and purpose, muddled statements and a "facial expression characteristic of confusion" (p.2), Wolanin and Phillips (1981) add memory loss. They argue that an inability to learn is related to faulty memory as this forms the link between the past and the present, as well as being the basis of problem-solving and judgement. The term 'cognitive and social inaccessibility' was coined to describe intellectual and institutionally disruptive behaviours and problems that prevent human interaction at a satisfying level (Wolanin and Phillips, 1981:8).

The term 'confusion' is often used in preference to the pejorative but equally imprecise term 'dementia'. Dementia denotes a failure of memory, personality and intelligence (Thompson, 1986) and, though a dementing person will exhibit confusion, signs of confusion may be manifest in the absence of dementia.

For the purpose of this study, a confused, elderly patient is a person aged 75 years or more who is recognised by staff as being disoriented to time, place, person, object and purpose, and who is likely to suffer from a defect of memory with a consequent impairment of communication, and who has been cared for in an institution for a period of at least three months.

Ward organisation: the manner in which the work of a unit or ward is organised has been a frequent subject of study (Nuffield Provincial Hospitals Trust, 1953; Adams and McIlwraith, 1963; Norton et al., 1962; Pembrey, 1978; Wells, 1980). Conventional work studies (Adams and McIlwraith, 1963; Wells, 1980) are of limited usefulness as these focus on the work carried out by individual nurses in relation to observable routine procedures and neglect psychosocial aspects of care (Overton et al., 1977). Supporting the use of a technological construct in the analysis of human service organisations such as hospitals, and following Perrow (1967) who maintained an integral part of an organisation's technology to be its raw materials (in the case of hospitals, its patients), Overton et al. (1977) identify three factors - uncertainty, instability and variability - associated with organisational technology. Three categories of wards or units which were characterised by the degree of indeterminacy of their technology were related in terms of outcome to care, cure or coordination practices.

Based on the assumption that human service organisations, like hospitals, are work organisations in which the organisational design affects the outcome of a defined programme of care, organisational design is defined as: ". . . the allocation of tasks and authority in a programme and its underlying norms and values, including ward philosophy, concerning staff and clients" (Cherniss, 1980:185). Because technologies are not well established and outcomes are difficult to measure, three aspects of organisational design - role structure, power structure and normative structure - are of particular importance in assessing the quality of service offered to patients (Cherniss, 1980).

For the purpose of this study, ward organisation refers to the role, power and normative structure within a bounded organisational unit in relation to the allocation of tasks and authority in a programme of care, as well as its norms, values and philosophy concerning staff and patients, or clients. It is based on the assumption that the design and organisation of work in a ward will affect the outcome of a programme of care.

CHAPTER TWO

CONCEPTUAL AND THEORETICAL FRAMEWORK

Serious differences . . . occur, not between those who would observe without thinking and those who would think without observing; the differences have to do with what kinds of thinking, what kinds of observing, and what links, if any, between the two.

(C. Wright Mills, The Sociological Imagination, 1970:42)

INTRODUCTION

Any study concerned with confused and dementing old people must fall within the discipline of gerontology, the scientific study of ageing. Gerontology is a complex field which draws upon the disciplines of biology, psychology and sociology to incorporate three main areas of study: theoretical, dealing with conceptual systems developed to integrate and explain observed facts about ageing; methodological, concerned with the development and testing of instruments for research; and applied, concerned with the prevention and amelioration of the adverse effects of ageing (Bromley, 1984). Though there is overlap with applications in practice, in the biological sphere are included the disciplines of geriatric medicine and psychiatry dealing with the aetiology, manifestation and clinical management of illness in the elderly. A vast field is covered in the psychology of ageing, all of it complex and much of which is controversial (U'Ren, 1987). Within this field three distinct areas, experimental, psychometric and applied, can be distinguished. While the main concerns of the clinical or applied psychologist lie in the measurement of cognitive function, the adaptational problems and the behavioural changes associated with the dementing illnesses, the discipline of nursing is concerned with the interactions between person and environment from the cellular to the societal level, as well as with the processes of human change and transition, e.g., in ageing, adaptation and dying (Meleis, 1985; Donaldson and Crowley, 1978; Torres, 1985). The perspective of nursing has evolved from the practical aim of optimising the environment with the purpose of fostering self-caring and adaptive behaviour conducive to health and well-being (Flaskerud and Halloran, 1980). As communication among workers from the different disciplines has been poor, a fact pointed out by Kendrick (1982) in relation to the lack of communication among workers in the different areas of psychology of ageing, there is a need to integrate the thinking and literature from diverse but complementary disciplines such as medicine, clinical psychology and nursing and, as the purpose of the study is to gain a greater

understanding of the problems faced by nurses in the management of UI, one of the most persistent and seemingly intractable manifestations of behaviour associated with the dementing illnesses, a major emphasis was placed on the behavioural perspectives of applied psychology and their 'goodness-of-fit' with the practice of nursing.

The complexity of the issues demanded a review not only of research studies related to UI in elderly people but, because the study was concerned with practical issues, consideration was given also to theoretical models and principles that have developed to guide practice. In a study concerned with the nursing care of dementing old people suffering from UI, four distinct fields were considered:

biomedical explanations of UI and associated therapeutic options;

the nature of the dementing illnesses in relation to the process of ageing;

psychological models of person-environment relations;

nursing models or frameworks upon which nursing practice may be based

The conceptual framework upon which the research design and method was based was drawn from these fields. Theoretical (and methodological) issues were considered in some depth for, although: ". . . theory does not solve technical problems . . . theories provide the input for action systems whose output produces the desired . . . effects" (Brandtstadter, 1980:14).

The chapter is divided into four sections. The first section is concerned with the dementing illnesses but, in order to comprehend the nature and extent of the impairments and behavioural changes associated with dementia, relevant studies of changes associated with normal ageing are briefly reviewed. In the second section, the central topic of this study, UI in the elderly, is considered. A general introduction of the pathophysiology of the urinary bladder is

followed by a short description of normal bladder function and continence of urine. The topic of UI in the elderly is introduced. Definitional issues are discussed and the main research literature from the United Kingdom and the United States from 1966 to 1989 is reviewed and summarised under four headings: epidemiological studies; urodynamic studies (including algorithms); functional correlates of UI; and therapeutic options. Studies of the behavioural approaches to the management of UI are discussed in the final part, and the need for a broader consideration of complex relationships is adduced.

Conceptual problems associated with the behavioural perspective are discussed and the need to develop an environmentally biased perspective is argued in the third section. In the fourth section an attempt is made to relate this behavioural-ecological perspective to conceptual developments in nursing. Finally, the nature of the theory-practice gap and the kind of knowledge needed for practice is addressed.

NORMAL AGEING

Introduction

Though ageing is a universal phenomenon, no universal theory of ageing has been advanced and no-one can explain satisfactorily why people age at different rates, although a distinction has been made between normal and pathological ageing (Miller, 1977; Woods and Britton, 1985). Though biological ageing is an endogenous and intracellular process, psychological ageing is affected by intrinsic as well as extrinsic factors through the interaction between person and environment (Gilleard, 1979). While a significant body of research has tried to unravel the effects of changes in physical and mental function on the normal processes of ageing, present knowledge has been described as crude (Woods and Britton, 1985). A useful

operational definition offered by Woods and Britton is that ageing is the progressive loss of the ability to adapt to internal and external change.

Normal ageing is assumed to reflect a general biological-psychological-social process of changes in which the organs and their functional ability become impaired; sensory and motor capacity is reduced; and the critical processing functions associated with intelligence are altered. The role and position of the elderly individual in society, and their beliefs, attitudes and personal qualities, as well as the content and organisation of experience are believed to alter (Bromley, 1984). The interpretation of many empirical studies designed to verify or refute these assumptions has, however, presented problems; cross-sectional as well as longitudinal studies are difficult to conduct and the interaction between physical and psychological problems is particularly acute (Hussian, 1981). Changes associated with cognitive and physiological processes are probably related more to health status than to ageing (Hussian, 1981). No attempt is made to review exhaustively the now extensive literature on ageing. Rather, those aspects of the process of normal ageing which are relevant to an understanding of the dementing illnesses are considered.

Measuring Age-Related Changes

Chronological age is self-evident; biological age is very difficult to measure. The functional age of an organ is calculated by measuring performance under standard conditions and comparing the results against norms based on a representative sample; in biological terms, for example, by the basic metabolic rate, or in psychological terms, by reaction times. What may appear fairly straightforward is made more complex by recognising that different functions within the same individual do not necessarily change in step with one another (Miller, 1977). Ageing is not a linear process.

Changes Associated with the Process of Ageing

Sensory losses

Sensory losses are not uncommon in older people; after the age of about 40, visual acuity declines, the most common complaint being a reduced ability to accommodate focus on near objects, to discriminate colour and to react to changes in brightness (Miller, 1977; Woods and Britton, 1985). Hearing, particularly in relation to high frequency sounds, is diminished, as is the ability to discriminate tones. However, the difficulty in discriminating loss in hearing due to an intrinsic process of ageing and those losses associated with extrinsic, environmental factors must be recognised. Old people who grew up in the days before antibiotic therapy frequently report long-standing inflammation and infection of the ears in childhood and youth. Similarly, taste, touch and smell have been found to deteriorate with age. These sensory changes have implications for the nature of test materials used in research into cognitive ability, as well as any process of assessment, and an understanding and appreciation of sensory changes associated with the process of ageing is needed to counterbalance the widely held belief of inevitable cognitive decline. Woods and Britton (1985) have pointed out that tests of vision and hearing are rarely, if ever, reported in studies of the cognitive processes of ageing and, as a result, findings may be compromised.

Motor changes

The underlying issue in any discussion of increased slowness as a consequence of ageing is whether this is due to sensory and effector processes or to the processes that control movement. Reaction-time experiments have separated out three components of reaction, sensory transmission, a component that involves the interpretation-decision-making-association and the component of motor transmission (Botwinick, 1977), and the results have suggested that increasing

slowness was a central rather than a peripheral phenomenon (Miller, 1977; Schaie and Willis, 1986). But slowness of movement is associated also with a degree of muscle atrophy, and with bone and joint degeneration, as in arthritis and osteoporosis.

Other changes

Deterioration of structures related to balance and gait lead to instability of posture and an increased likelihood of falls (Sharma and MacLennan, 1987). Due to a combination of decreased awareness of external temperature and a decline in the ability to maintain core body temperature, temperature regulation may become difficult and result in hypothermia (Woods and Britton, 1985). Sensitivity to taste and smell, and to pain, probably also decline with increasing age (Schaie and Willis, 1986).

Intellectual change

It has proven difficult to define the nature of change within an individual and within groups, and to identify factors associated with a decline in intelligence. Psychologists have tended to use existing measures of intelligence testing, but it has been recognised that tests developed for young children and adolescents are not appropriate to measure either the extent, or the subtlety, of cognitive change in elderly people (Woods and Britton, 1985). It has been difficult to identify any pattern of intellectual decline, though Siegler and Botwinick (1979), summarising data over a period of 20 years, conclude that, in a sizeable proportion of old people, little decline in cognitive ability was evident. Introducing the notion of the plasticity of behaviour, Baltes and Willis (1979) suggest that intellectual ability in individuals is a growing and, more importantly, developing function, not fixed but capable of fluctuation in the short term and idiosyncratic change in the long term. Criticising the nature of many tests applied to older people, Kendrick (1982) suggests that tests that do not reflect experience of everyday life to older people are meaningless, unrealistic and may be

performed badly. He asked that tests be made "ecologically valid". There is now considerable support for the conclusion that, in the measurement of intellectual ability in older adults, increased emphasis should be placed on the role of experience.

Global measurements of intellectual change

Knowledge of the nature of intellectual change is crude, however, particularly when global measures are used (Woods and Britton, 1985: 46). The distinction between fluid and crystallised intelligence made by Cattell (1963) has been shown to be valid in explanations of normal and of abnormal ageing (Woods and Britton, 1985).

Fluid intelligence is concerned with immediate adaptation, predominantly with the ability to perceive relationships between events and objects, to reason and to use abstract thinking. Dimensions of fluid intelligence have been shown to be dependent upon biological and physical integrity, and are open to change in the elderly in the face of internal and external challenges. Acute confusion associated with a urinary tract or a respiratory tract infection, and commonly seen in geriatric wards, illustrates the vulnerability of fluid intelligence.

Crystallised intelligence, based on aggregate experience of familiar materials and relationships, is more likely to continue into old age. Horn and Donaldson (1976) have rejected decline on either dimension as inevitable in an individual, emphasising that both types of intellect are combined in any adult's approach to a task. It is conceded, however, that a decline in fluid intelligence with ageing is more likely.

Selected Cognitive Function: Information Processing and Memory

Information processing

As a key cognitive function, believed by many to suffer an inevitable decline with ageing, psychologists have used 'reaction-time experiments' to study the three components of information processing: sensory input; central processing; and behavioural output (Woods and Britton, 1985). Attempts to study the component of sensory function are necessarily confounded by sensory losses associated with the normal ageing process, particularly those associated with sight, touch and hearing. When compensation was made for sensory losses, however, it has been possible to demonstrate that a slowing down was evident in the time taken to process information, an effect believed to reflect a process of primary ageing in the central nervous system (Birren *et al.*, 1979). The study was criticised, however, for an inappropriate application of laboratory-style tests to elderly people (Kendrick, 1982), so-called ecological invalidity. As Woods and Britton (1985) have pointed out, there are bound to be wide intra-group variations in basic cognitive ability in any group of elderly people, and some old people will score as well as those in a younger age group.

Memory

The topic of memory, particularly memory in old age, has been of considerable interest to psychologists and four types of memory have been identified: sensory memory (very short-term memory); primary or short-term memory involving short-term storage with little or no processing of information; secondary memory, the main memory function related to daily living and adjustment; and remote (or long-term) memory. It is generally understood that memory loss is associated with increased age and that this loss can be significant in many, but by no means all, older people. Woods and Britton (1985) have suggested that the elderly are poor at acquiring information

when under stress and in unfamiliar surroundings, which would suggest that communication is a key problem.

Psychosocial adaptation and adjustment

Though it is accepted that in normal ageing those personality traits which are stable over the lifespan, and those capable of further development, can be distinguished and identified (Birren, 1964), early models were concerned more with changes in personality and with life satisfaction and adjustment in old age (Woods and Britton, 1985). Theories that have considered development in old age have evolved principally from Erikson's (1963) general theory of personality.

Erikson (1963) describes eight stages of ego-development from infancy to old age as a series of tasks to be fulfilled. In adult life, tasks to be fulfilled begin with intimacy; the alternative is isolation. The next task is 'generativity', giving help as a contribution to society. The final task of old age, as described by Erikson (1963), is termed 'ego-integrity', in which the task is to review the lifespan and to gain a sense of the whole life. Ego-integrity involves an acceptance of a life that is passing, remembering past achievements and reconciling past failures and missed opportunities, and accepting the inevitability of death. The alternative is despair.

Criticised as linear, deterministic and ignoring biological decline, developmental theories have stressed the positive aspects of ageing and have been influential in the development of strategies like reminiscence therapy and life-review (Butler, 1982). Some of these criticisms are addressed in Neugarten's (1975) theory which also focused on task accomplishment in old age as a necessary part of successful ageing. Relevant and necessary tasks included:

- accepting the increasing imminence and reality of death;
- coping with sometimes painful, disabling conditions;

- making an accurate estimate of available choices that can be made to achieve satisfaction;
- giving and receiving emotional satisfaction from friends and relatives.

Neugarten (1975) concludes that individuals with different temperaments and personalities adjust to old age in different ways.

The theory of disengagement propounded by the sociologists Cumming and Hendry (1961) proposed a form of mutual withdrawal took place between the ageing individual and society, with the elderly person gradually giving up social roles, withdrawing from active social involvement to the benefit of society. The theory has been severely criticised for its ethnocentricity, for sanctioning negative attitudes on the part of individuals who may be manifesting indifference to care and treatment, cloaking an underlying and treatable depressive illness. The social aspects and the social structure of institutions that exclude the elderly from participation and the encouragement of a paternalistic approach to care are further criticisms of the theory.

Almost diametrically opposed is Butler's (1973) activity theory of ageing in which it is stated that older people should remain involved in society in order to maintain their ego-integrity. Though the type of activity may change (from a meaningful work role, for example), it should be replaced by a different, but equally meaningful role.

Coping and adaptation

Butler (1973) has stressed the ability of older people to come to terms with significant life events like personal loss and physical change. Older adults were found to adapt to change as well as younger persons following an initial period of disorganisation (Palmore *et al.*, 1979). Lazarus and DeLongis (1983), who emphasise the need to develop a longitudinal process-oriented perspective on coping, suggest that there is little evidence of age-related changes

in coping strategies. As Hussian (1981) has pointed out, older people can use previously learnt adaptive strategies to compensate for age-related changes.

Summary

There is now agreement that a number of cognitive functions decline slowly with age in some, but not all, individuals. Impairments are neither uniform nor extensive; the ability to solve problems, to learn new information, to remember and to use abstract reasoning showing most change. Factors other than intrinsic brain changes may impair cognitive function (U'Ren, 1987). Poor physical health, sensory losses and an increased prevalence of certain mental illnesses are more common in the elderly population and may affect cognitive and behavioural performance.

Early models of psychosocial adaptation emphasised characteristics of individuals as determining successful adjustment, but later models have recognised that adaptation is dependent also upon a fund of physical, social, economic and environmental resources. Increasingly, interest has developed in the interactions that take place between elderly persons and their environment, reflecting the value placed on the achievement of harmony or congruence (Newcomber and Bexton, 1978; Scheidt, 1978; Lawton, 1982). Reigel (1976: 689), critical of what he described as ". . . a preference for stable traits and competencies deeply rooted in Western psychology", has stressed that human development, even old age, can be understood only by paying heed to the conflicts and contradictions that arise between the individual and his environment. Such a perspective would draw attention to the ways in which problems are created and questions raised.

Current psychosocial models of adjustment and adaptation have stressed the diversity to be found in elderly people, and the need for consideration to be given to the physical and social environment in which their lives are led. Theories of disengagement and

activity, derived from a largely sociological perspective and a belief that the future can be controlled, reflect a Western, liberal approach in which ageing is seen as a social problem (Gilbert, 1970; Novak, 1979). Biologic and economic factors, as well as past life-style, have tended to be neglected. In that part of the lifespan that can cover up to 30 years, the activity theory may fit comfortably at one end of a spectrum with something closer to disengagement taking place at the other.

DEMENTIA

Introduction

Since the early 1960s it has been recognised that senility was not an inevitable concomitant of ageing (Birren, 1963), but only since the publication of Miller's book has there been a consensus that dementia is Abnormal Ageing (Miller, 1977). Only with ". . . the reconceptualisation of the relationship between Alzheimer's disease, senile dementia and ageing" (U'Ren, 1987:11) that accompanied the recognition of the impending demographic transition to a society with a large proportion of very old people has much research into that complex disorder been undertaken.

The main arguments for viewing dementia as abnormal ageing are thus: in dementia not only does the brain degenerate in advance of the body, but dementia is selective to, as well as within the brain. "Dementia is acquired brain disease that is diffuse and chronic" (Fraser, 1987:2). It is not, however, global and, paradoxically, ". . . brain cell death occurs in almost all areas of the brain except those that will, by continuing to function, ensure survival" (Fraser, 1987:2).

The purpose of this section is to provide an overview of studies into this debilitating disease. Despite the known physical and organic cause of the disease, the primary connotation of the term is of a general deterioration in intellectual functioning. Accordingly, the account of the pathophysiological changes identified post-mortem are considered only briefly. The main issues in classification and definition are discussed; estimates of prevalence in the United Kingdom are given and are linked to patterns of admission to long-term psychiatric hospitals in Scotland. Finally, aspects of behaviour and function in the main dementing illnesses are linked to the major impairments presented by patients in long-term care wards.

The classic description of failing memory, impaired judgement and defective impulse control has been associated with ageing since the earliest times (Lipowski, 1981). Several sources (Clayton and Martin, 1981; Lipowski, 1981; Mahendra, 1987) credit the earliest use of the term 'senile dementia' to Areteaus of Cappadoccia. Discussing the complexities in the classification of psychiatric disorders associated predominantly with the amnesic state, Lipowski (1981) has suggested that the term fell into disuse until the 19th century when interest in the condition was reawakened in France by Pinel and Esquoril seeking to understand the condition that became known as general paralysis of the insane (GPI). A clear differentiation of syndromes characterised by confused thoughts, faulty perception and a lack of spatio-temporal awareness began when the bacillus Treponema pallidum was isolated from the cerebro-spinal fluid of syphilitic patients. By the beginning of the 20th century a distinction was made between a dementing illness associated with GPI, arteriosclerotic disease and a process in the senium (Mahendra, 1987).

The epidemiology of the group of conditions known as the dementias has been difficult to ascertain, partly because the term encompasses what Mahendra (1987:11) has termed "an evolving concept", in which aetiology is unclear and diagnosis is complicated by the absence of unambiguous indicators and clinical investigations. The

terms 'dementia' is a description of a group of conditions in which the common feature is mental confusion. As the term is commonly understood, dementia may be the common end point of several disease processes, discernible pathologies and manifest symptoms (Fraser, 1987). Judgement of the dementing process is based on a history of symptoms, observations of behaviour and the location of facts within the context of an individual personality (Roth, 1985). A diagnosis remains descriptive, couched in terms of 'possible' and 'probable', and is made on the basis of a change from a previous state identified by another person (Mahendra, 1987).

Difficulties of nomenclature with terms like 'brain failure' and 'organic brain syndrome' have created a semantic muddle (Lipowski, 1981:39). On each side of the Atlantic, though definitions are similar, classification varies, although it is anticipated that agreement will be reached in time for the tenth revision of the International Classification of Diseases, sponsored by the World Health Organization and due in 1992 (Cooper, 1988).

Pathophysiology

The complex clinical and psychological symptoms and the neuropathological changes associated with primary degeneration of brain tissue, known as Senile Dementia (Alzheimer's type) were shown when Roth et al. (1955) and Kay et al. (1964) correlated deficits in cognitive ability with an above average number of senile plaques in the brain of elderly patients at post-mortem examination. Pathological changes associated with the disease have been described and the main changes from normal brain tissue identified. In younger age groups degenerative disease of the brain is uncommon and little difficulty is found in distinguishing between normal and abnormal tissue. In the elderly, however, "... changes characteristic of the dementias tend to merge both with one another and with the features of normal ageing" (Fraser, 1987:24), making clear-cut differentiation problematic.

The main changes include a decline in total brain weight accompanying atrophy and shrinkage; diminished cortical and white matter; shrunken gyri, enlarged ventricles and widened sulci, and an abnormally large subarachnoid space. The three main histopathological changes identified are:

Senile plaques distributed throughout the frontal and temporal lobes and the hippocampus. These are thought to comprise degenerating mitochondria due to the deposition of amyloid fibrils followed by degeneration of axonal endings.

Neurofibrillary tangles. Several hypotheses have been advanced for the cause of these changes, including the deposition of abnormal protein. One explanation offered is the abnormal oxidation of normal protein; another has suggested the excessive deposition of aluminium; and a third has suggested the introduction of new materials by a slow virus infection.

Granulovacuolar degeneration of the pyramidal cells of the hippocampus. The significance of these changes is not understood, but, as with senile plaques and neurofibrillary tangles, their density is correlated with the severity of the disease (Mahendra, 1987).

Plaques and tangles have, however, been found in the brain tissue of non-dementing subjects, though in relatively small numbers. Plaque density, though, has been found to discriminate functional and organic disorders and, within the range of organic disorders, between vascular and senile dementia (Corsellis, 1962). A positive correlation has also been established between plaque density and functional impairment (Perry et al., 1978). High plaque and tangle density ". . . virtually sets senile dementia (Alzheimer's type) apart from other conditions, including normal old age" (Fraser, 1987:70). Both states have been associated with the deposition of amyloid which is produced when a normal host protein is degraded by disease as a result of the formation of antigen-antibody complexes.

Thus, the formation of plaques and tangles is seen as an auto-immune phenomenon secondary to some form of cerebral insult (Fraser, 1987).

Biomedical Changes

There is now agreement that widespread abnormalities exist in the cholinergic transmitter system of dementing subjects, and possibly also in the noradrenergic system. To date, the application of cholinergic replacements has met with little success (Fraser, 1987). At present, no drug of proven value is available and, despite evidence of a physical cause, the main connotation of the term 'dementia' is a decline in intellectual function (Miller, 1977).

Definition and Classification

The definition of dementia offered in the Journal of the Royal College of Physicians of London (1981:142) is that:

Dementia is the global impairment of higher cortical function, including memory, the capacity to solve problems of day-to-day living, the performance of learned perceptuo-motor skills, the correct use of social skills and control of emotional reactions in the absence of the clouding of consciousness. The condition is often progressive and irreversible.

In the American Diagnostic and Statistical Manual of Mental Disorders (1980:120), dementia is defined as:

A syndrome featuring deterioration of previously acquired intellectual abilities sufficiently severe to interfere with social or occupational functioning, or both. Impairment of memory, abstract thinking or judgement is evident in a fully developed case. Defective impulse control and personality change in the form either of accentuation or acceleration of pre-morbid personality traits is usually present. The clinical course may be progressive, static, partly or fully reversible. 'Dementia' does not imply irreversibility.

In the preferred classification (Figure 1) currently in use in the United Kingdom, a distinction is made between primary and secondary dementias (Mahendra, 1987). The five primary dementias include senile dementia (Alzheimer's type); vascular or multi-infarct dementia (formerly arteriosclerotic dementia); Pick's disease; Huntington's chorea; and Creutzfeld-Jakob disease. Secondary dementias include normal pressure hydrocephalus, Parkinsonism and the so-called pseudo-dementias arising from severe depression and those associated with metabolic disorders and space-occupying lesions. Developments in neurosurgery in the last decade have shown that some dementias previously thought to be irreversible (normal pressure hydrocephalus and sub-dural haematoma, for example) to be at least partially reversible (Mahendra, 1987).

Nowhere in either definition of dementia is reference made to neurological assessment, to cerebral atrophy or to ventricular enlargement, neurofibrillary tangles or senile plaques. The definitions refer only to failing cognition and the attendant consequences, and to changes in behaviour. Characteristically, a patient is referred for medical opinion with changes in memory and personality, and with the description of onset and progression gained only from another person. Diagnosis is made on the basis of 'ruled out' other conditions and psychometric tests, hence the emphasis on the distinction between the dementias and a toxic, confusional state in which clouding of consciousness is present.

In the US/UK Diagnostic Project (Copeland et al., 1975), American psychiatrists were shown to diagnose dementia about one-third more often than their British counterparts. This difference was found to be related to the diagnostic practices in the two countries; the UK project team disagreed with 48% of American psychiatrists' diagnoses. Differences in diagnostic practices and differences in the classification system mean that statistics gathered using either system are not comparable and must seriously compromise comparability of research findings between the two countries.

Roth (1955) (UK)	DSM 3 (USA)
Primary disease:	A. With global cortical impairment:
1. Alzheimer's disease	1. Delirium
2. Vascular dementia	2. Dementia
3. Pick's disease	B. With selective cognitive abnormality:
4. Huntington's chorea	1. Amnesic syndrome
5. Creutzfeld-Jacob disease	2. Organic hallucinosis
Secondary disease:	C. With affective/personality syndrome:
Normal pressure hydrocephalus	1. Organic delusional syndrome
Subdural haematoma	2. Organic affective syndrome
Alcoholic dementia	3. Organic personality syndrome
Paraneoplastic disease	
General paralysis of the insane	
Others:	
Pre-senile dementia	
Pseudo-dementia	

FIGURE 1: Classification of the dementias, following Roth (UK) and Clayton and Martin (USA)

Compiled from Clayton and Martin (1981) and Mahendra (1987)

Causes of Dementia

Fraser (1987) is adamant that dementia is not part of the normal process of ageing, arguing that most individuals (around 80%, even of the very old) retain adequate mental functional ability to serve across the lifespan, despite evidence of histopathological change similar to those found in the brains of dementing subjects. But, as has been noted, it is the overall extent of the changes that seems to be critical.

In line with thinking that sees the end point of several disease processes culminating in a dementing illness, a body of informed opinion views the cause of senile dementia (Alzheimer's type), the most common form, accounting for 50-55% of all reported cases in the United Kingdom (Fraser, 1987), to be multifactorial, arising from a genetically determined susceptibility in conjunction with a variety of environmental factors, including viral agents, a disordered immune response, metal toxicity and even from head injury (Mahendra, 1987).

It is beyond the scope of this study to discuss the postulated causes of dementia which have been classed as predominantly genetic, immunological, toxic, related to nerve ending survival/growth factors or an infective agent (Henschke, 1987; Mahendra, 1987). Though five primary dementias are included in the United Kingdom classification system, only the two most commonly occurring conditions, senile dementia (Alzheimer's type) and multi-infarct or vascular dementia, will be discussed.

Senile Dementia (Alzheimer's type)

Characteristically, the onset of senile dementia (Alzheimer's type) is slow and insidious. The disease can occur at any stage of adult life, is more common in women than in men, and is more common after the age of 60-65 years. Three stages of the disease process have been identified (Sjogren *et al.*, 1952):

<u>Stage</u>	<u>Duration (yrs)</u>	<u>Characterised by</u>
I	2	Adaptation to the environment. Copes with environmental pressure; may involve depression.
II	2-5	Parietal lobe involvement with agnosia, aphasia and apraxia. Intellectual deterioration and personality change. Muscular weakness, extensor plantar response, distinctive posture and gait with increased muscle tone.
III	5-10	Rigidity and spasticity. Grand mal. Profound apathy; wasting.

Changes associated with Senile Dementia (Alzheimer's type)

Dementia has been described as acquired brain disease that is diffuse and chronic (Fraser, 1987), and characterised by senile plaques and neurofibrillary tangles that occlude large parts of the brain, particularly the cortex. The changes and manifest features of the disease are amnesia, agnosia, apraxia, aphasia and subtle neurophysical changes (Dodwell, 1987). These changes are seen as failures of intellect, personality and memory (Thompson, 1986). Breakdown in personality is reflected in a blunting of affect and loss of drive. In the early stages, apathy and a failure to pursue previously enjoyed hobbies have been reported (Ferm, 1974).

A convenient working model sees memory as comprising a temporary short-term store with limited capacity and a long-term memory store (Miller, 1977). Miller (1977) hypothesised that the main deficit of memory in senile dementia was related to the acquisition of new information, but in studies found deficits at many points in the total memory process, including the storage of new information and the addition of that information to the memory bank. It is the recall of recent information that is a striking feature of senile dementia.

Language has also been found to be depleted. There is poverty of vocabulary and range of expression, and, characteristically, difficulty in naming objects. This failure to supply the right name

for an object is probably due to agnosia, an error in recognition. But words are often substituted (paraphrasia), and perseveration and echolalia are not uncommon. According to Thompson (1986:8), although the relationship between language, thought and cognition is not clear:

. . . we probably think in words . . . use words to communicate . . . Thinking in words is 'inner language' which plans, monitors and regulates behaviour . . . The demented patient who is unable to produce a skilled sequence of actions, such as making tea or a call from a 'phone box, may have lost this use of language that plans and monitors motor acts.

A failure of cognitive skills reflecting damage predominantly in the frontal, parietal and temporal lobes of the cerebral cortex is manifest in a range of difficulties in language, behaviour and, most importantly, communication. The combination of losses is a progressive inability to identify and solve problems, and to act with intention, an overall disruption of previously managed everyday behaviour (Dodwell, 1987; Fraser, 1987; Mahendra, 1987) and, as the disease progresses, 'external language' involving both an understanding and expression of verbal symbols is increasingly impaired (Thompson, 1986).

Vascular or Multi-Infarct Dementia

Vascular or multi-infarct dementia can be seen in the context of vascular disease, as a result of multiple small and large vessel occlusions which culminate in an occlusion of a focal area; lesions are commonly bilateral (Wade and Hachinski, 1987). Cerebral infarcts greater than 100 ml are invariably associated with dementia but, when the lesion is smaller, the exact location becomes more critical (Tomlinson et al., 1970). But, as Wade and Hachinski (1987) have pointed out, criteria employed by Tomlinson et al. (1970) were stringent and patients with less florid symptoms may have been excluded. Vascular or multi-infarct dementia is characterised by an

incremental and stepwise decline in intellectual functioning, often following a cerebrovascular accident. Unlike senile dementia (Alzheimer's type), in which onset is gradual, vascular dementia has a more abrupt onset, involving focal neurological signs and symptoms. The pattern of deficits is patchy, often with retention of some cognitive function and insights, though manifesting disturbances of memory, abstract thought and judgement, impulse control and memory (Mahendra, 1987). Focal neurological signs include reflex asymmetries, extensor plantar response, dysarthria, and a small-stepped gait. There may be headache, dizziness, anxiety, depression and, characteristically, agitation and nocturnal confusion (Wade and Hachinski, 1987). Conventionally associated with hypertension and apoplexy, the relationship between vascular dementia and atheromatous changes in the great and small blood vessels in the brain is not clear (Mahendra, 1987). On post-mortem examination, cerebral infarcts were demonstrated in brain tissue of 40% of subjects who had manifested no evidence of intellectual decline (Tomlinson, 1968). In a comparative study of brain tissue in patients diagnosed as suffering either from dementia of primary degenerative origin or from vascular dementia, evidence of atheromatous changes and ischaemic areas was shown in the group diagnosed as vascular dementia (Mahendra, 1987).

In vascular dementia, due to the occlusion of areas needed for survival as well as those regions of the brain associated with higher function, earlier involvement of motor, visual and sensory pathways is evident. In contrast, senile dementia (Alzheimer's type) is more selective, with disturbances of speech and visual reflexes occurring before the involvement of motor function. In a study of 100 female in-patients diagnosed as suffering from dementia, no association was found between dementia and a generalised decline in neurological function (MacLennan et al., 1987). Focal neurological damage associated with problems of gait, balance and mobility was more likely to be associated with vascular dementia, it was concluded.

The cortical dementias are characterised by aphasia, apraxia and amnesia and other deficits of higher function whereas the subcortical dementias present with forgetfulness, slowness of abstract thinking, dysarthria and, usually, abnormalities of gait (Wade and Hachinski, 1987). It is now felt that vascular dementia may be diagnosed too often but differences in prevalence may be related to referral patterns, variations in diagnostic methods and a tendency to diagnose too frequently because of the coexistence often of stroke and dementia. In practice, the route to institutional care differs in the two groups, with those suffering from vascular dementia more likely to become immobile and to be admitted to a geriatric unit, whereas patients suffering from senile dementia (Alzheimer's type) are found in greater numbers in psychogeriatric units.

Prevalence of Dementia

Studies conducted in a Newcastle community during the 1950s and 1960s have provided the basic knowledge of the extent of psychiatric morbidity in the elderly (Roth et al., 1955; Kay et al., 1964). Of people aged 65 and over, 70% were found to have no significant psychiatric disorder and a further 15% were found to be suffering from a functional psychiatric disorder such as clinical depression, neurosis and anxiety states; the remainder were found to have mild to severe organic brain disease.

An editorial published in the British Medical Journal (1971) referred to a "Quiet epidemic" of dementia and, in 1982, the Health Advisory Service published a monograph entitled The Rising Tide. The message was that the incidence and prevalence of dementia in the elderly population was increasing. For the reasons identified earlier, problems of definition, diagnosis and classification, plus the confounding difficulties of treating as homogenous what is in reality a heterogenous population aged 65 and above, the prevalence of dementia has been difficult to establish (Ineichen, 1987). According to Ineichen (1987), it has been estimated that one in five

persons will end his or her life suffering from dementia and, of those over 85 years of age, one in three, 30%, will be so afflicted. The main features of studies of dementia conducted within the United Kingdom are outlined in Figure 2. It is interesting to note how few of these studies reach or exceed the figure of 6.2% for severe dementia, the widely quoted finding from the study by Kay et al. (1964).

The study by Broe et al. (1976), in which age-bands were separated, is revealing. To estimate the prevalence of dementia from a flat rate based on those aged 65 and above may be misleading, according to Ineichen (1987:198) who states:

In view of the lower figures suggested by recent research [that is, the study by Maule reported in 1984, and the study by Clarke in 1984) a simple rule of thumb is suggested: 1% of those aged 65-74, and 10% of those aged 75 and above.

However, Ineichen's belief that the prevalence of dementia has been (wrongly) inflated was challenged in a letter to the British Journal of Psychiatry by Dr Kay who pointed out that less than half of the studies cited by Ineichen showed rates of severe dementia, less than 3%, ". . . showing the state of confusion the grading of dementia is in" (Kay, 1989:121). One of the problems is, of course, the inclusion (or not) of patients in institutions. In practice, the majority of the population of dementing persons will remain in the community (Arie, 1981). Most will be living in a private household, with men less likely than women to be living alone. About one-third of all female sufferers will live alone. This does not mean, however, that women are necessarily more prone than men to suffer from dementia. Sex differences, shown mainly in a differential increase in the prevalence of dementia among women, were not confirmed in random community-based samples (Bergmann, 1987). Differences were explained by the fact that wives, often younger than their husbands, were more likely to sustain the caring role in the community and also by the selective survival of women. The 1981 Census of the Population of Scotland (HMSO, 1988) shows 37% of

Author	Date	Location	Age Range (yrs)	Sample Size	Sampling Frame	Method	% Sev-Mod Dementia	% Severe Dementia
Kay <u>et al.</u>	1964	Newcastle	65+	758	Representative sample	Interviews	-	6.2
Gruer	1975	Scottish Borders	4 age groups	762	1:20 sample: For urban/rural male/female	Interviews	6.9	
Broe <u>et al.</u>	1976	Glasgow/Kilsyth	75 75	808	N.K.	Surveys (3) + interviews	-	1.6 (65-74) 7.2 (75+)
Gilmore	1977	Glasgow	65+	300	N.K.	N.K.	4.3	1.0
Gurland <u>et al.</u>	1983	London	65+	396	GP lists	*Semi-structured interview/assessment *22-item scale	-	2.5
Clarke	1984	Melton Mowbray	75+	1203	Total population	Interview/cognitive assessment scale	-	4.5
Maule <u>et al.</u> (Fieldwork 1968-69)	1984	Edinburgh	62-90	487	Random/GP lists	Interview/semi-structured questionnaire	-	2.9

FIGURE 2: Studies of the prevalence of moderate-severe dementia in the United Kingdom
Adapted from Ineichen (1987), with permission

persons aged 65 and over to be living alone; in those over 75 years, 24% of men and 48% of women lived alone.

Informal support is most likely to come from family members who are likely to experience a span of around seven years when mental decline is evident in their relative. Hospitalisation, or some other form of residential care, is more likely for those living alone, or when the informal caring network can no longer cope. Over a period of three years, 22% of all respondents in a study of the use of hospital facilities required some form of institutional care, but 62% of respondents with dementia needed hospital care and spent ten times as long in institutions (Bergmann, 1985).

Institutional Care

The number of the population resident in Scottish psychiatric institutions fell steadily from 336 per 100,000 male patients in 1970 to 238 per 100,000 in 1986 and 229 in 1988; and from 364 per 100,000 female patients (1970) to 324 per 100,000 in 1986 and 318 in 1988. Over this period the number of admissions of patients suffering from pre-senile and senile dementia was consistently upward. Between 1970 and 1986, male and female patients aged 65 and above admitted to hospital with a diagnosis of senile dementia rose from 16.7% of all admissions (1970) to 35.3% in 1986, and to 52% in 1988. The number of male and female patients suffering from senile dementia and resident in Scottish psychiatric institutions on the census day (31st December) is shown in Table 1. Comparing those aged 65-74 with those aged 75 years and above, the picture that emerges is of a population in psychiatric hospitals who are very old and probably frail.

It has been estimated that more than 4,500 patients suffering from dementia are living in mental illness hospitals (Scottish Hospital In-Patient Statistics, 1989); approximately 3,500 in general hospitals and about 2,500 are living in local authority homes

TABLE 1: Percentage of all residents suffering from senile dementia in psychiatric hospitals, by gender and age-decile (expressed as a percentage of all residents in that age group)

Age Range (yrs)	1980	1985	1986	1988
Male:				
65-74	13.8	19.8	20.4	17.9
75+	37.1	53.0	53.4	54.0
Female:				
65-74	23.0	30.3	30.6	29.4
75+	51.5	63.6	65.0	66.7

Source: Scottish Hospital In-Patient Statistics

for the elderly (SHARPEN, 1988). However, as beds are not necessarily designated 'psychogeriatric', official statistics concerning hospital provision must be treated cautiously and may be unreliable (SHARPEN, 1988, para. 74). Echoing the recommendations made in the Timbury Report on "Services to the Elderly with Mental Disability in Scotland" (1979), the setting up of small units of a homely character close to the community, served and managed by nurses, has been advocated also by the authors of the review of "Scottish Health Authorities Review of Priorities for the Eighties and Nineties" (SHARPEN, 1988). At present, only about two such units are in existence though three homes for the confused elderly have been opened by the Board of Social Responsibility of the Church of Scotland. An increase in the provision of long-term hospital beds has also been recommended (SHARPEN, 1988).

The overall picture of service provision and of admission policies is confused. A two-year prospective study of 11 local authority homes in the Glasgow area revealed no increase in the extent of behavioural disabilities or dementia among the residents

(Masterton, et al., 1981). The authors conclude that their findings, which ran counter to reported studies in England and Wales (Booth et al., 1982), reflect a change in admission policies by social work departments. A similar conclusion was drawn by Bland and Bland (1986) who compared findings from Carstairs and Morrison's (1971) study and Isaacs and Neville's (1976) study with their own study, conducted in 13 local authority homes in a single Scottish Region (Bland and Bland, 1984). It was concluded that:

. . . a narrower definition of appropriateness for admission . . . was applied by social work management teams. It is generally understood that continence of urine is one of the criteria of admission to local authority homes. (p.28)

Successive governments have supported a policy of care in the community for the elderly and the relatively low numbers (about 5-6%) in institutional care attests to the extent of reliance on community care. Nevertheless, the numbers of old people in an institution of one kind or another have risen over the last 20 years and the need for such provision is likely to remain for two reasons.

a) Neither the nature of the care nor the frequency of demand for care is static in an elderly population. Isaacs and Neville (1976) draw attention to three time intervals that determine the need for care: the relatively long time interval, for shopping and cleaning which can be supplied by a home-help service, or for dressing a leg ulcer which can be attended by a district nurse; the more frequent but again pre-arranged interval such as meals, which can be supplied by a visiting service; and the unpredictable demands for care like toileting which require an immediate and available presence. The unpredictable nature of dementia makes this one of the most demanding conditions for carers to sustain (Arie, 1981). The sufferer has neither insight into his/her condition nor the ability to anticipate and avoid danger. Capacity for self-care may be so reduced as to require 24-hour surveillance, which is why the dementing elderly are prime users of institutional care. The role of the statutory services, Arie (1981:171) concludes: ". . . is in the provision of

institutional care of a decent and humane standard . . . Society now expects more than minimal standards of care in state institutions".

b) A second reason for the continuing need for institutional care rests on the acknowledgement that such care is complementary rather than an alternative to care in the community. The reassurance of an available option, should the need arise, serves to strengthen care in the community and, as Parker (1981) has pointed out, such an option may be crucial in determining the extent of family involvement. And when the intensity and complexity of care needed becomes too great to be sustained in the community, care of the individual in a protected setting must be available. An increased provision of hospital beds has been recommended (SHARPEN, 1988). In the Annual Report of the Hospital Advisory Service (1985), it was noted:

. . . there was no sign of decrease in pressure for admission of patients suffering from dementia . . . Most areas reported difficulty in finding beds for patients, even those urgently in need of care.
(Health in Scotland, 1985, para.2.20)

An increase in the provision of hospital beds was recommended in the Report on Scottish Health Authorities Priorities for the Eighties and Nineties (SHARPEN, 1988).

Behavioural Aspects of Dementia

Cognitive decline with a concomitant loss of functional ability is characteristic of dementia. A classic study by Ferm (1974) describes the order of functional loss in 124 patients in a Finnish hospital who were assessed by nurses using the modified Isaacs-Walkey scale (1964) and classified into three groups: mild, moderate or severe dementia. Nine variables were identified and assessed on a six-point scale ranging from complete independence and adequate performance, through to uncertain performance and partial performance with control and/or some help, down to 'complete care necessary' (p.186). The pattern of loss of abilities was seen to be remarkably uniform, irrespective of the degree of dementia. In areas of

functional performance like mobility, eating, and bowel and bladder control, the percentage distribution of scores was found to be bimodal, particularly on the ability to eat, to move, and control of the bowel and bladder. On the index, 'ability to eat', for example, about 25% of the respondent subjects could eat independently and about 26% needed complete assistance; the remainder fitted in between, requiring more or less assistance. Ferm (1974) concludes that once control over an area of functional ability is lost, the ability to act with intention will also be lost. Eighty per cent of patients had to be washed and dressed; 40% were immobile; more than 50% could eat spontaneously or with some help; and one-third retained control of bowel and bladder. More than 90% were found to have no hobbies and only 5% could communicate freely. The progression of losses took the following path: 1) hobbies; 2) ability to wash and dress; 3) orientation to time and place; 4) participation in group events; 5) recognition of persons; 6) control of bladder; 7) control of bowel; 8) ability to eat; 9) ability to move.

Dementia follows a set pattern, Ferm (1974) concludes, in reverse order to ontogenic development. Behaviours learned early in life disappeared last, with more recently acquired behaviour the first to be lost. Woods and Britton (1985) felt Ferm to be premature in her conclusions. Some of the criteria employed can be criticised for combining observation of actual performance with too much subjective interpretation, e.g. "little spontaneity, requiring virtually constant help" (Ferm, 1974:187).

To gather data on the nature and prevalence of behaviour problems associated with senile dementia (Alzheimer's type) (SDAT), Teri et al. (1988) investigated 127 patients with a provisional diagnosis of SDAT using the Folstein Mini-mental State Examination (Folstein et al., 1975) to score cognitive deficits and to assess a range of cognitive tasks, including orientation, language and memory. The Blessed Dementia rating scale (Blessed et al., 1968), which has been shown to correlate with the level of cortical involvement, was used

to evaluate changes in patients' activities of daily living and self-care skills. Finally, eight items identified as problematic behaviours and reported as prevalent in SDA patients were observed and evaluated. These items were: restlessness, agitation, wandering, hallucinations, suspiciousness, incontinence, personal hygiene and falling. Patients who were classed as severely demented on cognitive and behavioural scores were found to have three or more problems, e.g. poor hygiene, wandering and incontinence. The study provides empirical validation of significant problem behaviour in severely dementing patients.

Gilleard et al. (1980) compared behavioural disabilities in two groups of institutionalised elderly people, one group in a psychogeriatric hospital and the other in a local authority home. Using the Clifton Assessment Procedure for the Elderly (CAPE) (Gilleard and Pattie, 1976, 1981), four areas of disability were assessed by senior staff. The hospital population required more supervision and help with the activities of daily living, and scored more highly on indices of confusion and incontinence which were found to be persistent rather than occasional. Overall, it was concluded that increased incontinence, confusion, poor communication and a need for greater supervision reflected the behavioural consequences of cognitive impairment characteristic of the dementing illnesses in hospitalised patients.

Stillwell et al. (1984) found that new units set up for the care of the elderly with severe mental impairment had been planned for demented but able-bodied patients with a relatively low patient: staff ratio. Over a period of three years, patients were found increasingly to need heavy physical nursing care and consequently staffing ratios in line with wards in psychogeriatric hospitals. The growing problem, the authors conclude: ". . . is not that of the mentally confused but physically well; it is the increase in the number of mentally confused and physically frail for whom neither ESMI nor old people's home were intended" (p.133)

These studies (Ferm, 1974; Gilleard et al., 1980; Stillwell et al., 1984; Teri et al., 1988) have shown that the populations of psychogeriatric wards are likely to be severely disabled in the performance of the activities of daily living and to suffer from three or more behavioural problems. Donaldson's longitudinal studies (1979, 1983, 1984) reveal that three-year survivors, continuously resident in psychogeriatric wards, showed marked decline in self-care abilities. Urinary incontinence was consistently identified as a problem.

Summary

A brief discussion of the pathophysiology of dementia was followed by a consideration of difficulties of definition and classification, and in estimates of prevalence within the United Kingdom. Changes characteristic of senile dementia (Alzheimer's type) and with vascular dementia were outlined. Issues in institutional care were discussed, and it was noted that the need for such care was likely to continue and, indeed, pressure for available places showed no signs of lessening. Available evidence from studies of behavioural changes associated with dementia suggested that, in the institutional setting, patients frequently manifested three or more problems. Moreover, a decline in self-care over time has been noted in several recent studies. Urinary incontinence, though a behavioural problem that may be of fairly late onset in the progression of the disease, is consistently recorded as a major problem.

URINARY INCONTINENCE

Introduction

Although the main reasons for UI have been recognised since the 17th century when Goldberg classified the condition into defects of storage and emptying (Kinshen and Cape, 1984), only since 1882 when Mosso and Pellacani reported the use of water cystometry to evaluate bladder function, a technique refined and described by Rose in 1925, has the development of urodynamic technology allowed clinicians to investigate the mechanisms of bladder function.

Pathophysiology of the Urinary Bladder

Micturition is a physiological process in which urine, comprising waste materials suspended in water excess to the body's requirements, is excreted from the urinary bladder through the urethra. The urinary bladder is a hollow, muscular organ consisting of three layers (serosal, detrusor and mucosal). The innermost, mucosal layer consists of transitional epithelium extending to the proximal urethra and forming a functional, internal sphincter (Williams and Pannill, 1982).

Relaxation and contraction of the urinary bladder is effected by specialised three-layer muscle tissue, enervated by antagonistic, sympathetic and parasympathetic nerves (Brocklehurst, 1984) originating in the sacral segment of the spinal cord. Neurological control of bladder and urethral mechanisms require nervous system reflexes and organisation in interaction with the pelvic ganglia with an input from the autonomous nervous system from the spinal cord at S2-4 (Figure 3). Sympathetic nerves act on the smooth muscle of the bladder wall, relaxing and allowing it to fill, and, at the same time, contracting the internal sphincter of the urethra to prevent leakage. The opposite effect is met by the parasympathetic nerve

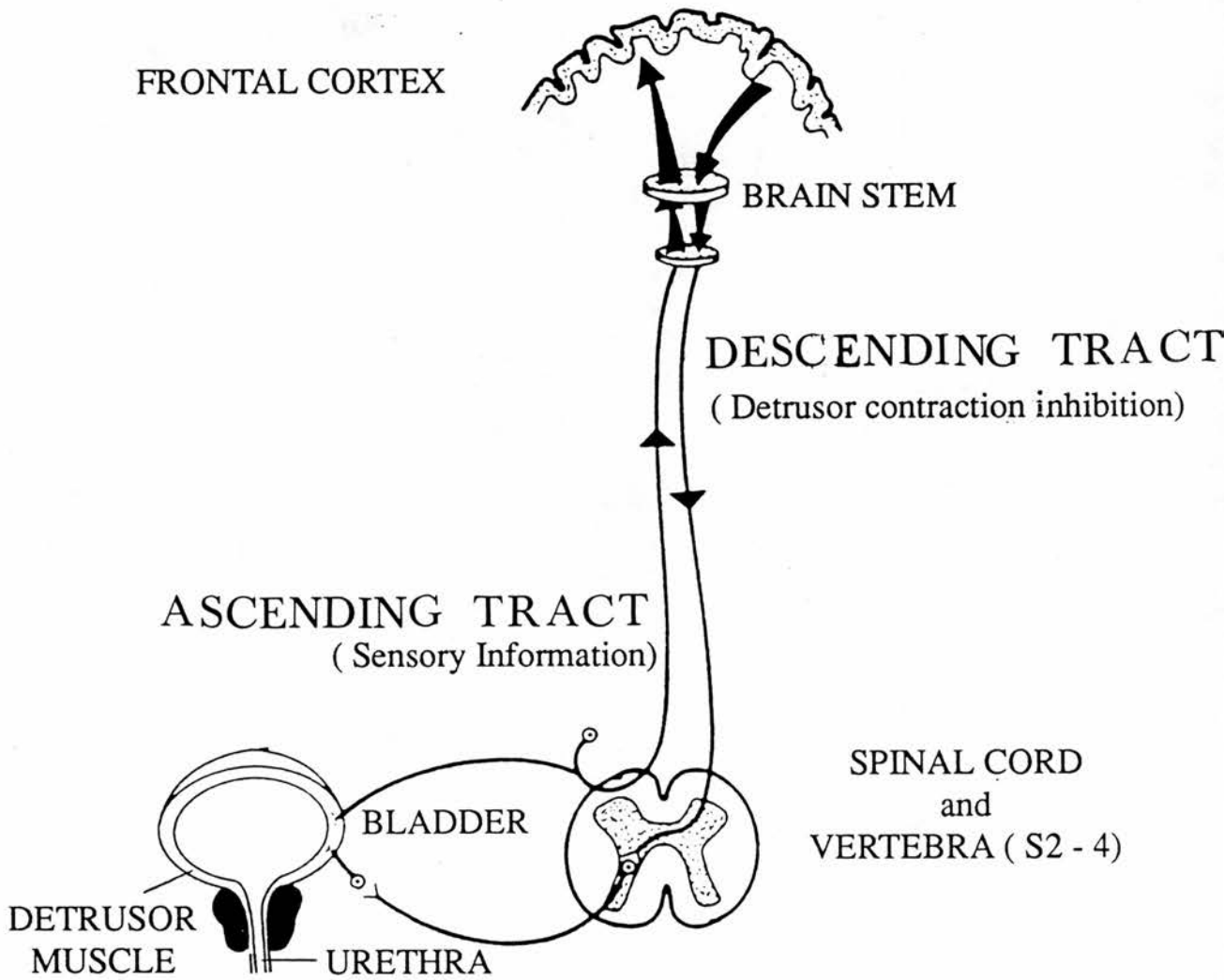


FIGURE 3: Brain-spinal cord-bladder mechanism

supply by which the bladder contracts and the internal sphincter relaxes, allowing stored urine to be expelled. As the bladder fills, stretch receptors located in the detrusor muscle transmit impulses through the pelvic nerves to the spinal cord and back through the parasympathetic fibres. This pathway constitutes the neuromuscular reflex which maintains the muscle tone of the bladder (Wein and Raezer, 1979).

When the bladder fills to approximately 300 ml, unless inhibited by a controlling mechanism in the frontal lobes of the cortex and thalamus, contraction of the detrusor muscle will occur (Bradley, 1974). Yeates (1976:14) describes the act of micturition as consisting of three phases: filling the bladder; voluntary postponement; and subsequent emptying. "Normal emptying is the result of a sustained bladder contraction which raises the intravesical pressure sufficiently to overcome the resistance of the urethra". For the maintenance of continence it is essential that intravesical pressure remains lower than intraurethral pressure. Intravesical pressure is affected by cortical activity, cholinergic stimulation and inhibition, afferent impulses to the bladder, bladder filling and intra-abdominal pressure. Intraurethral pressure is affected by alpha-adrenergic receptors, intra-abdominal pressure, the thickness of the urethral mucosa and some anti-spasmodics and muscle relaxants (Williams and Pannill, 1982).

The Normal Bladder

On cystometric examination, no rise in intravesical pressure is shown as filling takes place: the first sensation of fullness is shown when around 250 ml of fluid are held in the bladder (Brocklehurst and Dillane, 1966). Bladder capacity is around 500 ml without undue discomfort, though more can be stored, and typically emptying is complete. Over the age of 60-70 years bladder capacity is reduced to around 350 ml, with a residual 10 ml of urine following emptying. A static pool predisposing to urinary tract infections



may be formed from this residual urine. The frequency of micturition characteristic of the ageing bladder is increased as a result of this reduced capacity. In normal ageing, the strength of pelvic floor muscles and of the external sphincters is diminished in conjunction with an overall decline in overall muscle tone (Williams and Pannill, 1982). There is no evidence, however, that laxity of muscles is a cause of UI. In elderly women a reduction in circulating oestrogens may affect the smooth transitional epithelium of the internal sphincter and the urethra.

Continence of Urine

The acquisition of continence is learned behaviour involving the ability to identify those places in which it is socially acceptable to pass urine as well as the ability to postpone evacuation until that place is reached (Millard, 1979). These complex skills are acquired in conjunction with other social skills, whose development occurs in four stages:

- between the ages of one and two years, the child acquires an awareness of bladder fullness;
- between the ages of four and five years, an ability to stop the flow of urine in midstream is developed;
- by the age of five years, the child can start and stop the flow of urine at any level of bladder fullness (Doleys and Meredith, 1982).

During the second stage of personality development, roughly from the second to the fourth year, when the child is learning control of his environment, the acquisition of bladder control results in feelings of autonomy, pride and enhancement of self-esteem. The variant of behaviour modification commonly used in toilet training of the young child uses shaming as well as praise. Parental love and esteem are invoked, and continence becomes associated with restraint, goodness, virtue and, above all, cleanliness. Continence contributes to a positive body image, a sense of integrity and of wholeness, of

protective and healthy coping with one's body and the environment (Norris, 1982).

Most children are continent during the day by the time schooling begins, though at night-time continence can be more difficult to achieve, with a persistent condition enduring into adolescence in a minority of cases. A survey of the population aged five years and over in two London boroughs and in 12 general practices throughout England and Wales (n = 22, 430; Thomas *et al.*, 1980) shows 81.9% of male children and 82.5% of female children aged from 5-14 years to be fully continent. In the age group 15-24, these figures rise to 95.4% in the male population but remain at 82.5% in the female population (Thomas *et al.*, 1980). This survey shows continence to remain between 89 and 95% in males aged from 15 to 65 years. With each succeeding age-decade, the percentage of men reporting complete continence fell from 81% in those aged 65-74 years to 69% in those aged 85 years and over. In women over the age of 24 years, levels of reported complete continence were between 67% in those aged from 35-44 years to 61% in those aged 85 years and over. The increased prevalence of UI in women is associated with parity, and in later life with a thinning of the urethral mucosa in the absence of oestrogen (Williams, 1983). Ten per cent of women in the middle ages and 16% in women over the age of 75 years reported regular incontinence. Regular incontinence in men showed only a slight increase (from 2 to 8%) up to the age of 84 years, though over the age of 85 years, this figure increased to 15%. As this is the age group most commonly found in psychogeriatric wards, this finding has implications for nursing care.

Definitional Issues

The prevalence of UI in the general population has been difficult to establish, partly because of difficulties entailed in defining the case. Does an isolated episode of UI count as an incident, or must the individual have recurring episodes and, if so, at what time

intervals? Does leakage of urine of even the smallest amount constitute an episode of incontinence, or must underwear be sufficiently wet to require changing? Most definitions have failed to resolve these issues. Yeates (1976:26), for example, describes UI as:

. . . the loss of urine at any time except when desired by the individual, which means it must occur during the filling phase, before the production of the detrusor response, or during the postponement phase, after the detrusor response has been felt

and went on to define it as ". . . the passing of urine in an undesirable place". Agate (1970:76) uses similar criteria, defining UI ". . . in practical terms as the voiding of urine at unsuitable times and elsewhere than in an acceptable receptacle". Criteria used in these definitions include appropriate time and place, i.e., incontinence is defined by social convention.

Those difficulties of definition led the International Continence Society (ICS) to use the nature of the problem created by the loss of continence as the defining characteristic: "Urinary incontinence is a condition in which there is an involuntary escape of urine to an extent that causes a social or hygienic problem and is objectively demonstrable" (ICS, 1976:41). The strength of the ICS definition lies in the notion of problem. Though the individual who is not continent as defined by criteria of appropriateness of time and place may lack insight to identify for himself a problem, issues of hygiene and appropriate behaviour, particularly in the collective setting of a hospital ward, allow questions of appropriate action to avoid, mitigate or forestall the identified problem. This perspective is consistent with the need for appropriate nursing interventions rather than a nursing task or procedure.

Classification

Though the most commonly used classifications are of stress, urge, reflex or overflow incontinence, these denote the symptom or sign of the manifest condition: urologists have stressed the importance of distinguishing between the different types of UI according to lower urinary tract dysfunction. Urinary incontinence may result from:

- . a disturbance of nervous or psychological control;
- . a disability of muscle function;
- . a structural abnormality. (ICS, 1981).

Regardless of any disease process, bladder pressure sufficient to overcome sphincter resistance is a prerequisite for UI (Williams, 1983). On this basis, UI can be classified as:

- . detrusor instability in which bladder contractions are sufficiently great to overcome sphincter resistance (syn. unstable bladder, spastic or uninhibited bladder);
- . overflow incontinence which occurs when bladder volume is very high as in cases of impaired sensory output, e.g. in motor neurone disease, in bladder disease like an enlarged prostate gland, or in damage to the spinal cord;
- . sphincter weakness due to decreased resistance of the bladder outlet as in stress incontinence.

These three categories are sometimes termed 'true' incontinence.

Two further categories can be included:

- . functional incontinence in which UI is associated with a functional impairment like immobility;
- . iatrogenic incontinence which results from treatment or practices initiated for another reason, like the use of restraints or the prescription of diuretic drugs.

In patients with severe dementia, UI may be associated with many factors. In addition to neurological problems, environmental factors, adverse stimuli and iatrogenic factors like diuretics, restraints, sedatives and tranquillisers contribute to a wide range

of physiological, physical and behavioural factors that may result in UI (Ramphal, 1987).

Summary

A description of the mechanism of the urinary bladder was followed by a brief discussion of the normal bladder and the acquisition of continence of urine. Issues in definition of UI were discussed and it was concluded that the definition afforded by the ICS, that UI is viewed as a social or hygienic problem, is consistent with an approach used in nursing. Finally, a classification of UI as bladder dysfunction is supported.

INVESTIGATIONS INTO URINARY INCONTINENCE IN THE ELDERLY

Introduction

Since the mid-1970s the research literature on UI falls into four categories:

- epidemiological studies of the prevalence of UI in the community, residential homes and in hospitals (Yarnell et al., 1979; Gilleard, 1980, 1981; Masterton et al., 1980; Thomas et al., 1980; McLaren et al., 1981);
- urodynamic studies that examine the aetiology of the condition (Eastwood, 1979; Castleden, 1981; Hood, 1981);
- studies relating to the development of algorithms to aid non-invasive investigations (Hilton and Stanton, 1981; Eastwood and Warrell, 1984; Hilton, 1987);
- therapeutic options including:
 - a) clinical trials of drugs (Brocklehurst, 1971; Ritch et al., 1977; Cardozo et al., 1980; Walter et al., 1982; Brocklehurst et al., 1984; Frewen, 1984);

- b) general studies in the promotion of continence (Clay, 1976);
- c) behavioural strategies for the promotion of continence in the elderly.

Epidemiological Studies

Introduction

Relatively few studies of the prevalence of UI have been reported and those that are reported present difficulties in comparisons, mainly due to differences in the populations studied and in the sampling method used. Differences in data collection methods and in the definitions and criteria also serve to obscure the whole picture. In this section, the reported studies from the general population, from local authority homes and from hospitals are considered.

General population studies

Yarnell and St Leger (1979) studied two samples of elderly people drawn at random from the age-sex registers of general practitioners in a small town. In the first sample, men over the age of 70 years and women over the age of 75 years were included; in the second sample, men and women born between 1909 and 1910 (i.e, aged 64-65 years) were included. Of the 396 persons eligible for inclusion in the study, 388 were interviewed either directly or through the next of kin, and a questionnaire that probed past medical and surgical history, drug usage and any symptoms in relation to the lower urinary tract was completed. Towards the end of the interview, the person was asked about ". . . any leakage of urine in the past twelve months and the time of day that occurred" (p.81). A follow-up visit 3-12 months after the initial interview was given to those persons reporting UI. An increased prevalence of incontinence was found to be associated with age, cerebrovascular accidents, surgical procedures for prostatic hypertrophy and uterine prolapse, drug usage and multiple hospital admissions (Table 2).

TABLE 2: Distribution of subjects (a) by age and sex and (b) by reported urinary incontinence

Age Range (yrs)	64-65	70(M)-75(F)	80	Total
(a) Age:				
Male	58	84	27	169
Female	82	70	67	219
Total	140	154	94	388
(b) Reported incontinence:				
Male - none	53 (91.4%)	77 (91.7%)	21 (77.0%)	151
- incontinent	5 (8.6%)	7 (8.3%)	6 (22.0%)	18
Female - none	72 (88.0%)	55 (79.0%)	55 (82.0%)	182
- incontinent	10 (12.0%)	15 (21.0%)	12 (18.0%)	37
Total	140	154	94	388

Adapted from Yarnell and St Leger (1979)

In the sub-sample of incontinent patients (n = 55), eight lived in local authority accommodation and a further four were in a geriatric hospital. The majority of sufferers lived in the community. At the follow-up visit, symptoms of incontinence had disappeared in 16 of the 49 persons (approximately 30%) who were traced. The authors conclude that a significant amount of reported incontinence is transient and that most sufferers are living in the community.

The prevalence of recognised and unrecognised UI was investigated in an extensive survey of health and social service agencies in two London boroughs and by a postal survey sent to 22,430 persons over five years of age on the practice lists of 12 general practitioners throughout England and Wales (Thomas et al., 1980). The response rate to the postal survey was 89%. Regular UI was defined as involuntary excretion or leakage of urine in inappropriate places or at inappropriate times twice or more per month (p.132). One question investigated "occasional" incontinence, i.e., less than the stipulated twice per month. The responses were categorised as "never incontinent", "occasional incontinence" and "regular incontinence".

Based on an estimated population of 285,000, the prevalence of incontinence recognised by the statutory authorities was 2.5% in women and 1.3% in men over 65 years of age, including those living in an institution. Findings for those aged 65 years and over are given in Table 3. Prevalence of regular incontinence was 6.9% in men and 11.6% in women over 65 years of age. In those aged 75 years and above, however, prevalence rose to 9% for men and 14% for women, most of which was in the community and unrecognised by the statutory authorities.

A randomly selected sample of 589 persons living in the community and in institutions were invited to take part in a study to investigate the prevalence of UI in a New Zealand population (Campbell et al., 1985). Thirty persons declined, so the total sampling frame was 559, representing 97% of elderly people in the area. Within this sampling frame was included all those aged 80 years and more, a one-in-six sample of those aged 75-79 years and a one-in-twenty

TABLE 3: Distribution of subjects (a) by age and sex and (b) by reported incontinence (expressed as whole numbers with percentages in brackets)

Age Range (yrs)	65-74	75-84	85	Total
(a) Age:				
Male	790	273	39	1,102
Female	1,001	456	105	1,562
Total	1,791	729	144	2,664
(b) Reported incontinence:				
Male	637 (80.6%) 66 (8.4%) 48 (6.1%) 206 (75.5%)	26 (9.5%) 22 (8.1%) 27 (69.2%)	1 (2.6%)	6 (15.4%)
Female	733 (73.2%) 146 (14.6%) 88 (8.8%) 288 (63.2%)	62 (13.6%) 73 (16.0%) 64 (61.0%)	17 (16.2%)	17 (16.2%)

Adapted from Thomas et al. (1980)

sample of those aged 65-74 years. Each person was interviewed directly or through the next of kin and a history of any incontinence episodes during the past year was recorded. Discriminating questions included, "Do you have any trouble controlling your water?" If answered negatively, the next question was "Do you ever wet yourself or do you always get to the toilet in time?" (p.66). Frequency of incontinence was classified as occasional when it happened two times or less per week, frequent when it occurred more than three times per week and episodic when incontinence occurred frequently for a short spell to be followed by regained continence (Table 4). According to the authors (Campbell *et al.*, 1985), this study closely resembles that carried out by Yarnell and St Leger (1979) in the sample investigated and the questions posed. The findings of the two studies are also similar for the group aged 80 years and more, with both studies reporting a prevalence of 22% in this age group, most of whom lived in the community.

TABLE 4: Distribution of subjects (a) by age and sex and (b) by reported incontinence (expressed as percentages)

Age Range (yrs)	65-74	75-79	80	
(a) Age:				
Male	30	32	134	
Female	22	47	290	
(b) Reported incontinence:				
Male - none	97%	91%	78%	
- incontinent	3%	9%	22%	
n =	30	32	134	196*
Female - none	82%	96%	78%	
- incontinent	18%	4%	22%	
n =	22	47	290	359*

* Satisfactory histories obtained in 555 of 559 interviews

Adapted from Campbell *et al.* (1985)

Table 5 presents a comparison of the findings in the studies by Yarnell and St Leger (1979), Thomas et al. (1980) and Campbell et al. (1985). As noted, the study by Yarnell and St Leger (1979) and that by Campbell et al. (1985) used a similar sampling frame and method of investigation and, although the study by Thomas et al. (1980) was based predominantly on a postal survey and used a different scheme of classification, the findings are not dissimilar, especially at the upper age ranges. The reported prevalence of UI in men over 80 years of age is in the range of 22-30% and in females is from between 18 and 39%. These findings illustrate the effect of age-structure on community services and have implications for the provision of services like incontinence aids and laundry services.

Prevalence of urinary incontinence in residential homes

Masterton et al. (1980a:62) draws attention to a "remarkably consistent" 16-19% prevalence of UI in residential homes for the elderly. The most common reason for referral to the geriatric psychiatry service is UI, ". . . the single most common problem that creates difficulty for the staff". It was concluded that ". . . the presence of severely incontinent old people in residential homes is undesirable" (Masterton et al., 1980b:104). What constitutes severe incontinence is unclear, however. Criteria like those used in studies by Thomas et al. (1980) and Egan et al. (1985:137) of ". . . involuntary excretion or leakage of urine and/or faeces in inappropriate places or at inappropriate times, twice or more a month" bear little resemblance to criteria used in studies in residential accommodation and hospitals. The use of implicit quantification in terms like 'occasional' and 'frequent' makes comparison between studies difficult. Wilkins and Jolley (1978) use the term 'frequent' in a non-specific way. Clarke et al. (1979) and Donaldson et al. (1983), though not specifying precisely how often constitutes frequent, include an intermediate category of once per week which, it could be assumed, is close to the category of 'occasional'. This usage, however, makes 'occasional incontinence' twice as common as Thomas's (1980) criterion of twice per month. A

TABLE 5: Comparison of studies of prevalence of urinary incontinence in the general population

Study	Age Ranges	Percentage Reporting No Incontinence
Yarnell and St Leger (1979)	64-65 70 (male) - 75 (female) 80	Male - 91.4 - 91.7 - 77.0 Female - 88.0 - 79.0 - 82.0
Campbell <u>et al.</u> (1985)	65-74 75-79 80	Male - 97.0 - 91.0 - 78.0 Female - 82.0 - 96.0 - 78.0
Thomas <u>et al.</u> (1980)	65-74 75-84 85	Male - 80.6 - 75.5 - 69.2 Female - 73.2 - 63.2 - 61.0

compilation of studies of the prevalence of UI in residential homes between 1979 and 1982 to illustrate the "remarkable consistency" (Masterton et al., 1980) of findings is given in Table 6.

Prevalence of urinary incontinence in the hospitalised elderly

Two hundred and seventy-four male patients aged between 65 and 90 years, and 248 female patients of a similar age range were included in a one-day census of UI (Isaacs and Walkey, 1964). Forty per cent of male subjects and 45% of female subjects were found to be incontinent on one or more occasions. According to Isaacs and Walkey (1964:374): "Incontinence occurs predominantly in patients with organic brain disease and severe mental impairment who are unable to walk, dress or feed themselves".

Most other reports (Carstairs and Morrison, 1971; Clarke et al., 1979; Gilleard et al., 1980; Donaldson et al., 1983) use data compiled within other studies of dependency in which UI is but one item in a profile of dependency or a behaviour classification; data are presented in Table 7. One exception is the study by McLaren et al. (1981) in which 128 female long-stay patients with an average age of 81 years and diagnosed predominantly as suffering from senile dementia were monitored and checked over a period of three weeks. On average 29.8% were continent by day, although over the period of three weeks, only 13 patients (n= 128, 10.7%) were fully continent all the time. The average number who were continent over one week was 18.4%. If the criteria used in studies in local authority homes, i.e., 'frequent incontinence' is defined as three or more times per week, then an average 64.2% of patients were severely incontinent.

Ouslander et al. (1982) analysed and compared the characteristics of elderly patients in seven nursing homes. The population reviewed contained 954 subjects, 842 of whom (90%) were aged 65 years and more, with a mean age of 83.7 years. Fifty per cent of this group (419 subjects), ranging from 43-60% of the population of individual homes, were identified by nurses as incontinent of urine; 28% with

TABLE 6: Prevalence of urinary incontinence in local authority homes (1972-82)

Year	Author	Number of Subjects	Percentage Urinary Incontinence	Criteria
1979	Alexander and Eldon	107	10	Not stated
1979	Clarke <u>et al.</u>	2,084	16 8	Frequent Occasional
1980	Gilleard <u>et al.</u>	683	16	Frequent
1980	Masterton <u>et al.</u>	404	16-19	Frequent
1983*	Donaldson <u>et al.</u>	2,147	16	Frequent

*derived from histogram

TABLE 7: Summary of studies of urinary incontinence in hospitalised, elderly patients

Author	Year	Gender	Age (yrs)	No. in Sample	Location	Method	Continent (%)	Incontinent (%)
							Occ.	Freq.
Isaacs & Walkey	1964	M & F	65+	522	Geriatric hospital	Day census	164 (60.0)	28.0 16.0
							134 (55.0)	25.0 37.0
Carstairs & Morrison	1971	M & F	65+	416	Psychiatric hospital	Survey	271 (44.0)	28.0 27.6
Clarke et al.	1979	M & F	65+	1,508 (82 (723 (703	Acute hospital Geriatric hospital Psychiatric hospital	Day census	Not known	7.0 24.0 16.0 36.0 10.0 30.0
Gilleard et al.	1980	N.K.	65+	202	Psychiatric hospital	Survey	67 (30.0)	25.0 45.0
Donaldson	1979	M & F	65+	1,330 (85 (723 (672	Acute hospital Geriatric hospital Psychiatric hospital	Day census	Not known	8.0 26.0 16.0 39.0 10.0 32.0
Donaldson	1983	M & F	65+	1,154 (95 (601 (658	Acute hospital Geriatric hospital Psychiatric hospital	Day census	Not known	8.0 30.0 15.0 47.0 14.0 40.0
McLaren et al.	1981	F	80+	128	Psychogeriatric hospital	3 weeks	13 (10.7)	18.4 64.2

occasional incontinence and 34% with frequent incontinence. In a further 10% an external device was used to trap the urine and 28% had an indwelling catheter. Using a standardised mental status questionnaire, 57% of the population scored less than three points in a range of 0-10 and a further 19% scored between three and six. Further, the mobility of many of these patients was also restricted with 25% bed-bound and 51% wheelchair-bound: only 11% were capable of independent transfer to a commode or toilet. Only 14% of those identified as incontinent by nurses had incontinence recorded as a problem in the medical notes.

Summary

Table 8 draws together studies from general populations, local authority homes and hospital studies. Gilleard (1980) argues that, during the last decade, a change has taken place in residential care with local authority homes now catering for a clientele approaching levels of dependency hitherto found in hospitals. An upward trend from 4% in 1971 to 17% in 1980 that can be discerned in the prevalence of UI in local authority homes is not matched by a similar trend in hospital populations. In the future, the main distinction between the two sectors, Gilleard (1981) argues, is likely to be administrative rather than clinical.

Despite the lack of rigorous comparability, it is illuminating to examine the similarities and differences between studies in different sectors (Table 8). The studies share two characteristics; they deal with the topic of UI in an elderly population. Unfortunately, differences between the studies make comparisons difficult: there is neither an agreed operational definition nor criteria for different categories of UI. The age range in the studies is from 65-90 years but, as Thomas *et al.*'s (1980) study shows, UI is becoming an increasing problem in populations over the age of 75 years. Studies that include the age range 65-74 years in a general category of 'elderly' tend, therefore, to underestimate age-specific prevalence.

TABLE 8: Studies of prevalence of urinary incontinence in the general population, residential homes and in hospital

Author	Year	Sample	Age Range (yrs)	Subjects	Location	Continent (%)	Incontinent frequent (%)
Yarnell & St Leger	1979	Random	65+	388	General	86.0	14.0
Thomas <u>et al.</u>	1980	GP lists	65-74 75	790 312	General	81.0 69-76	6.0 8-15
Campbell <u>et al.</u>	1985	Random	65+ 80+	559	General	N.K.	11.6 21.7
*Donaldson	1979	Census	65+			76.0	16.0
Clarke	1979	Census	65+			74.0	16.0
Masterton <u>et al.</u>	1980	Referred	65+	404	Local authority homes	80-85	16-19
Gilleard <u>et al.</u>	1980	Survey	65+	685	Local authority homes	84.0	16.0
Isaacs & Walkey	1964	Total	65+	522	Geriatric hospital	57.0	43.0
Norton	1962	Total	N.K.		Geriatric hospital	N.K.	43.0
Wells	1980	Total	65+		Geriatric hospital	N.K.	

TABLE 8 (contd.)

Author	Year	Sample	Age Range (yrs)	Subjects	Location	Continent (%)	Incontinent (frequent) (%)
Clarke <u>et al.</u>	1979	Census	65+	723	Geriatric hospital	48.0	36.0
				703	Psychiatric hospital		
Donaldson <u>et al.</u>	1983	Census	65+	573	Geriatric hospital	(a) 45.0	39.0
				672	Psychiatric hospital	(a) 58.0	32.0
				601	Geriatric hospital	(b) 38.0	47.0
				658	Psychiatric hospital	(b) 46.0	40.0
Gilleard <u>et al.</u>	1980	Survey	65+	202	Psychiatric hospital	30.0	45.0
McLaren <u>et al.</u>	1981	Total	80	128	Psychogeriatric hospital	13.0	64.0

*derived from histogram

Comparison of studies in the general population (Yarnell et al., 1979; Thomas et al., 1980; Campbell et al., 1985) show a prevalence of UI of between 12 and 15% in those aged 65 years and above, increasing with age. In local authority homes, figures are consistently in the range 16-19% (Clarke et al., 1979; Gilleard et al., 1980; Masterton, 1980; Donaldson et al., 1983). Interpretation is more difficult in hospital studies, however, because of the different circumstances of assessment and rehabilitation wards and long-stay areas. Admission to geriatric units for investigation of UI is reported to be around 30% of all reasons for admission (Hood, 1976). Reported rates, both in geriatric and psychogeriatric long-stay areas, are in excess of 50%. Unfortunately, longitudinal series which permit the analysis of trends are rare. An exception is in the studies conducted by Donaldson (1979, 1983) which show an increase in frequent incontinence from 55% to 62% in geriatric hospitals and from 42% to 54% in psychiatric hospitals despite a reduction in the total number of beds. The study by MacLaren et al. (1981) in psychogeriatric wards illustrates the intensive nature of the problem in specific areas which is hidden when wards and populations of different type are conflated.

The prevalence of UI in different sectors of the health care system and in different age groups is difficult to estimate, but, as the extensive survey conducted by Thomas et al. (1980) shows, rises markedly in the population aged 75 years and over, the age group which population projections predict will increase over the next 25 years. Studies to date lack comparability, mainly because of different definitions, lack of clear and unambiguous criteria and problems of sampling. Relevant information, like functional ability, is frequently overlooked. Agreed and standardised criteria and similar methods are needed, not only to monitor the prevalence of UI in different populations and settings but also to monitor trends over time.

Clinical Investigations: Urodynamic Studies

Introduction

Cystometry

Until the advent of cystometric investigations in the late 19th century (Kirshen and Cape, 1984), classification of urinary tract dysfunction was a matter of differentiating signs and symptoms. Cystometry has made possible an examination of the relationship between the pressure invoked by a measured volume of urine or other fluid contained in the urinary bladder and the response evoked by the bladder musculature and the urinary sphincter (Williams, 1983). Brocklehurst and Dillane (1966a) describe three methods of conducting cystometric investigation, all of which involve the use of an indwelling catheter attached to a machine to record responses from the bladder and urethra. In the first method, the bladder is filled in a smooth and controlled way by a continuous flow of fluid until a contraction of the detrusor muscle or a leakage of fluid at the sphincter outlet is observed. The second method involves a more rapid filling of the bladder in increments of 25 ml or 50 ml of fluid until a response is evoked. According to Brocklehurst and Dillane (1966a), though most workers have preferred to use the continuous flow method, a comparative study by Langworthy et al. (1936) revealed marginal differences only. The main advantage of incremental filling, Brocklehurst and Dillane (1966a) conclude was increased speed and convenience. Both methods, however, merely simulate normal, physiological filling of the bladder with urine, the third possible method of investigating bladder function. As the bladder is known to be reactive to both emotional and intrusive influences (like a catheter, for example), findings of cystometry must be treated with a degree of caution.

Terms used in cystometry

The point at which a response to being filled with fluid is evoked by the detrusor muscle is related to a bladder capacity norm of between 350 and 600 ml established in a series of studies between 1927 and 1951, involving mainly young and middle-aged subjects (Brocklehurst and Dillane, 1966a). The term detrusor instability is used to describe uninhibited bladder contractions which are sufficiently strong to overcome the resistance of the urethra. Common synonyms for the term detrusor instability include unstable bladder, spastic bladder and uninhibited bladder. The normal value in old age, established by Brocklehurst and Dillane (1966a) is measured as a rise in pressure (aneroid barometer) of not more than 10 cm at the first reflex bladder contraction. An unstable bladder is recognised by an increase in detrusor pressure of more than 15 cm during filling.

The term detrusor hyperreflexia is applied to those bladders in which the recorded response occurs at a volume below the norm for the age group. Areflexia is the term used when little or no detrusor response is evoked (Eastwood, 1979). Urethral closure pressure profile is measured by the careful withdrawal of the indwelling catheter to determine the intraluminal pressure gradient along the urethra (Williams, 1983). The usefulness of information obtained on urethral pressure profile has been questioned, particularly in the case of incontinent women, though Williams (1983) supports the usefulness of the test as a diagnostic aid in bladder outlet obstruction in men. Other measurements that can be made during cystometry include peak flow rate (which, if less than 15 ml per second, is suggestive of bladder outlet obstruction); bladder capacity; residual urine following voiding; and whether or not leakage occurs (Brocklehurst and Dillane, 1966b).

Cystometric studies in the elderly

Cystometric studies were used to compare a group of 40 continent and 100 incontinent elderly women (Brocklehurst and Dillane, 1966a,b). In the continent group (age range 65-85 years with 31 women aged 75 years and over), 30 women were hospital in-patients, with the remaining ten subjects volunteers from a general practice. Seven women had a previous history of UI and seven complained of frequency of micturition; 26 had no related urinary tract complaints. Twenty-four subjects showed no evidence of neurological deficits, though 16 of the 40 subjects showed signs of neurological deficits, with the main diagnosis of cerebrovascular accident in 11 subjects.

Seventeen subjects (43%, n = 40) were found on cystometric examination to have a bladder capacity of less than 250 ml at the onset of contractions. Even with the most liberal interpretations, Brocklehurst concluded, only 40% of the sample (16:40) could be said to have a normal bladder. The investigators were forced to revise downward previously accepted criteria of normality in the ageing bladder to include:

- bladder capacity of 300 ml or more;
- onset of the desire to void one increment before bladder capacity is reached.

In a subsequent investigation of 100 incontinent elderly women (Brocklehurst and Dillane, 1966b), 83% suffered from disease of the central nervous system. More than half the group (42:83) had suffered a stroke and a further 27 women were diagnosed as suffering from cerebral arteriosclerosis. The most probable cause of UI in the elderly, it was hypothesised, was a fault in the entire micturition reflex emanating from a cerebral lesion. A generalised decline in muscle tone and elasticity in the elderly contributed to a reduction in the efficiency of bladder function in which an increased amount of residual urine with a concomitant increase in the probability of bacteriuria and urinary tract infection. In addition, the relatively

large pool of residual urine left less capacity for new urine to be retained before bladder contractions were evoked, resulting in increased frequency of micturition. "The basic ageing change [in urinary tract function] is to be looked for in the brain and not in the bladder" (Brocklehurst and Dillane, 1966b:301). Much of the subsequent debate on UI in the elderly centres on the nature of those changes in the brain.

The main presenting clinical features of UI were described in 182 subjects attending a geriatric urodynamic clinic (Eastwood, 1979). Basic urodynamic investigations, including cystometry and urethral closure pressure profile were performed in all patients and supplemented, if necessary, with cystoscopy and radiological examination of the lower urinary tract. The purpose of the analysis was to provide diagnostic information to classify the incontinence in terms of detrusor dysfunction, bladder dysfunction or mixed lesion (p.41). Seven groups of patients were identified (Table 9). The largest group of patients presented with UI in conjunction with cerebrovascular disease and senile dementia (Alzheimer's type) and were studied because such diagnoses are frequently found in geriatric practice rather than from an expectation of unusual findings on investigation. Areflexic bladders not suspected on clinical grounds were demonstrated on cystometry and provided important information to guide appropriate treatment.

Patients similar to those included in the study are likely to form the caseload of most geriatric units. Eastwood (1979) concludes, however, that the benefits of widespread use of urodynamic investigations in geriatric units remain to be demonstrated. Even though risks were minimal, the procedure is invasive and potentially distressing to old people.

Clinical and urodynamic studies were carried out on 100 elderly patients over 65 years of age who had been referred to an incontinence clinic (Castleden et al., 1981). Subjects were categorised according to the findings of cystometric investigations

TABLE 9: Classification of urinary incontinence by symptom and type of dysfunction
n = 182; male (M) and female (F), aged 64-96 yrs (Source: Eastwood, 1979)

No. in Sample	Main Presenting Symptom	CYSTOMETRY FINDINGS		URETHRAL PRESSURE PROFILE	
		Detrusor		Indications	
		Abnormal	Normal	Abnormal	Normal
		H*	A*		
30 M	Obstruction - abnormal detrusor alone - outlet obstruction alone - mixed	14	2	5	5
18 M&F	Post-operative incontinence - prostatectomy - bladder neck incision - abdomino-perineal excision - abdominal aortic aneurysm	10	2	1	1
		1			12
		1	2		1
		1	1		2
		1	1		2
33 M&F	Stress - neurological lesion	16	4	5	5
		1			20
		5		3	5
6 F	Chronic retention with overflow - urethral obstruction (stenosis) - idiopathic chronic urinary retention - large capacity bladder				5
10 M&F	Nocturnal incontinence - ca. bladder	8	1	1	9
M&F	Neuropathic bladders			1	
75	- neurologically impaired	55	19	1	1
10	- neurologically intact	9	1		10
		128	33	21	26
					156

*H = hyperreflexia; *A = areflexia

into one of four groups described in terms of bladder dysfunction and associated clinical conditions.

Thirty per cent of the sample had no associated neurological lesion, or any associated condition, and though 21 of these patients demonstrated an unstable bladder on testing, Castleden et al. (1981) insist that this was not evidence of pathogenesis since urodynamic studies in a population aged between 10 and 49 years established bladder instability though no cause could be found. Though psychological factors may be outweighed in the elderly by disease and degeneration, and even if no clinical evidence exists to support the hypothesis cystometrically, bladder instability appears to be similar to that in younger people.

Castleden et al. (1981) argue that previous studies by Brocklehurst and Dillane (1966a,b) were biased in using only female, mainly hospital in-patients in whom the primary lesion diagnosis was a neurological lesion. Similarly flawed was the study by Isaacs and Walkey (1964) in which an association between mental and physical ability and the occurrence and severity of UI was made on clinical observations only, without the benefits of cystometry. This argument is also unsatisfactory: though bladder instability may be present in a section of the population in the absence of pathogenesis, in the elderly such instability is more likely to be longstanding and persistent rather than of recent origin.

One of the aims of a study by Hood (1981) was to see whether urodynamic investigations were justified in a busy geriatric ward. Findings on cystometric examination were related to an appropriate intervention strategy and the outcome evaluated after six weeks using simple criteria: dry, improved, or no change. Investigations were carried out on 159 elderly, incontinent subjects, 39 males and 120 females referred from acute and long-stay hospitals, nursing homes, local authority homes and the community. Table 10 shows the source of referral.

TABLE 10: Source of referral of subjects

Source	Male	Female	Total
Admitted from home	15 (38%)	55 (45%)	70 (44%)
Seen as out-patient	5 (13%)	20 (17%)	25 (16%)
From long-term care	14 (36%)	20 (17%)	34 (21%)
From other hospitals	2 (5%)	13 (11%)	15 (10%)
From local authority home	3 (8%)	9 (7%)	12 (8%)
From nursing home	0	3 (3%)	3 (2%)

Source: Hood (1981)

A full physical examination, including a test of walking and self-care abilities and the abbreviated Mental Function Test, was carried out on each person prior to cystometry. An intervention based on strict two-hourly toileting in conjunction with appropriate therapy, such as physio- or drug therapy, as indicated by the urodynamic findings, was instituted and the outcome evaluated six weeks later. Clinical examinations revealed mainly neurological problems such as cerebrovascular accidents, dementia and Parkinsonism, common in geriatric units. Fifty-four per cent of the males ($n = 39$) were highly dependent and unable to wash or dress without help and 59% were unable to walk without assistance. Thirty-six per cent of the men in contrast to 17% of women were, however, referred from long-term care. This is consistent with Thomas *et al.*'s (1980) finding that UI is more common in hospitalised elderly men.

Cystometric findings (Table 11) shows the unstable bladder to be the most common bladder dysfunction (56%). A further 26% of the sample had a normal bladder, a figure remarkably close to the 30% of the population investigated by Castleden *et al.* (1981).

TABLE 11: Conditions associated with bladder dysfunction

Bladder Dysfunction	No. in Sample	None	Dementia	CVA	Diabetes Mellitus	Impaction	Clinical Depression	RA	Breast Cancer	Other
Normal	16	5	3	3						5
Unstable	68	21	13	13	4	6				11
Atonic	11	3					2	2	2	2
Irritable	5	1	1	1	1	1				
Total	100	30	17	17	5	7	2	2	2	18

Source: Hood (1981)

The results of the interventions introduced following cystometric examinations are shown in Table 12. The lowest success rates were in-patients referred from long-term care, particularly male subjects who manifested high levels of dependency. Regaining continence, Hood (1981) concludes, is related directly to mobility and mental function. The use of urodynamic studies was justified as definite diagnoses of large capacity bladder was made in ten cases and of stress incontinence in 21 cases, all of whom were spared unnecessary and potentially harmful drug therapy. In 45% of cases, clear-cut benefits were gained and in the remaining 55% response to drug therapy was monitored.

TABLE 12: Result of interventions to promote continence

	Dry	Improved	No Change	Died
Male	6	5	20	8
Female	51	46	21	4
Total	57 (35%)	51 (32%)	41 (25%)	12 (8%)

Source: Hood (1981)

The unstable bladder, defined as an increase in detrusor pressure greater than 15 cm during filling, has been established as the most common cause of UI in the elderly (Brocklehurst and Dillane, 1966a,b; Eastwood, 1979; Castleden et al., 1981; Hood, 1981). Ninety-five patients aged 65 years and more, and with an unstable bladder, were seen in an incontinence clinic (Castleden et al., 1985). Following a clinical examination, a mental status score was established and an assessment of mobility was graded on a scale ranging from fully independent to completely immobile. Each subject has a simple urodynamic cystometry investigation to confirm the diagnosis of bladder instability before commencing on an intervention that

combined habit retraining with drug therapy (imipramine) for an undisclosed period.

Of the 95 subjects, 44% regained continence and a further 21% improved. In 35% of the subjects, however, no improvement was sustained. Castleden et al. (1985) confirm Hood's (1981) observation that UI in men, who tended to score less well on mental status and on mobility, was less tractable than in women. Overall, the results of the intervention or programme by Hood (1981) and by Castleden et al. (1985) are fairly close; approximately two-thirds of subjects can be helped to improve their continence status to a significant extent. Subjects who are mentally alert, mobile and cooperative are more likely to have a positive outcome, it was concluded (Hood, 1981; Castleden et al., 1985).

A joint approach from departments of urology and geriatric medicine was advocated by Eastwood and Smart (1985) for the treatment of UI in a particular group of elderly men who suffered from chronic retention of urine with overflow incontinence in conjunction with neurological deficits. A definite diagnosis before proceeding to surgery was desirable.

Following a joint assessment and full medical review, 75 patients whose ages ranged from 64-94 years were admitted to a geriatric unit for urodynamic investigation. The most common neurological deficits manifested in the group were attributed to cerebrovascular disease (51), senile dementia (Alzheimer's type) (17), Parkinsonism (4) and one case each of normal pressure hydrocephalus, cervical spondylosis and paraplegia. The extent of impairment and disability was assessed on a simple performance rating scale (Eastwood and Smart, 1985:236).

Of the 75 patients admitted to the ward, seven did not proceed to full urodynamic investigation and a further four were found to be suffering from a urethral stricture which was dilated. In the remaining 64 patients, urodynamic studies permitted a definite diagnosis in only 13 patients due to the fact that full cooperation

with: ". . . elderly men where micturition to command under test conditions is difficult to achieve, and also because bladder capacities may be too small to produce a diagnostic flow curve" (Eastwood and Smart, 1985:237).

A diagnostic cysto-urethroscopy was performed and 37 patients proceeded to surgery. Good results, defined as the establishment of normal micturition without frequency and with less than three episodes of incontinence per week, were achieved in 16 of the 27 patients in the group who suffered from cerebrovascular disease. Those in whom the outcome was favourable scored better on the disability scale. The disability of the patient, it was concluded (Eastwood and Smart, 1985), rather than his age is the better predictor of outcome. The use of a joint assessment is necessary to exclude those patients in whom the chance of a successful outcome is small.

Though Castleden (1981) and Hood (1981) have been enthusiastic advocates of urodynamic investigations in the elderly, a survey of all geriatricians in the United Kingdom who were members of the British Geriatric Society (Isaacs, 1979) revealed widespread variation in the availability and use made of a range of services. Questionnaires were sent and replies received from 115 consultants in 105 units. Six questions were designed to assess the extent of available help and the use made of services from departments of radiology, urology and gynaecology, the physiotherapy department, from nursing services (in relation to charting). Particular emphasis was laid on the availability and use made of urodynamic investigations. Fifty-five replies indicated no available access to urodynamic equipment in the district. Only three departments used their own equipment, though in 21 units a service was available but not used. Thirty-three responses indicated a helpful service on occasion from a urologist. Similarly, 47 consultants found gynaecology services helpful, while 32 indicated a helpful and interested service from nursing staff. In all, urodynamic studies were used by only one-fifth of the units which suggested, according

to Isaacs (1978:43), ". . . a lack of conviction by geriatricians of the value of urodynamic studies".

The earliest statement that the main cause of UI in the elderly was overactivity of the neuromuscular mechanism of the bladder resulting from a deterioration of cortical inhibitions and not from sphincteric weakness was made by Wilson (1948). Subsequently, an association between increased dependency and diminished mental capacity was noted by Isaacs and Walkey (1964), and urodynamic studies in the 1960s (Brocklehurst and Dillane, 1966b) appeared to confirm the main cause of UI to be a neurological deficit. These studies were considered biased, however, in that only hospitalised patients were included. Urodynamic studies in the 1970s that included patients drawn from the community showed a normal bladder in about 30% of elderly, incontinent subjects (Castleden, 1981; Hood, 1981). Nevertheless, the unstable bladder was confirmed as the single most common bladder dysfunction in the elderly.

In the investigation of UI in younger age groups, a specific abnormality of lower urinary tract function can be identified (Hilton, 1987): in the elderly, however, clear-cut diagnosis has proved to be difficult in many cases. Among the identified differences in diagnosing the cause of UI in older age groups is a failure to specify explicit differences among patients with the same presenting problem. Categorisation, traditionally made on the basis of presenting symptoms, has been made difficult by problems of establishing relationships (between neurological deficits and UI, for example). An ideal diagnosis, according to the International Classification of Impairment, Disability and Handicap (World Health Organisation, 1980), should include an indication of aetiology, pathology and prognosis, none of which is clear in elderly populations.

The finding that UI can occur even in around 33% of patients with normal bladder function identified on cystometry must cast some doubt on the hypothesised link between neurological deficits and micturi-

tion pathways. The controversy about the relationship between neurological deficits and the unstable bladder is likely to persist though it has been suggested (Castleden et al., 1985; Eastwood and Smart, 1985) that the aetiology of dysfunction is of minor interest: the re-acquisition of continence is related to mental and physical status (Hood, 1981; Castleden, 1985; Eastwood and Smart, 1985).

Algorithms

The usual process of arriving at a diagnosis by a process of 'ruled out' is essentially a sequential process of decision-making based on the systematic pursuit of clinical evidence (Kaplan and Greenfield, 1978). The use of a branching logic of the form 'if A then B', has allowed the development of 'criteria-maps': combining retrospective evidence from urodynamic studies with a simple system of differential diagnosis has evolved as a flow-chart or algorithm.

The first algorithm based on retrospective analysis of urodynamic investigations suggested that up to 60% of invasive investigations could be avoided (Hilton, 1981). A standardised data sheet collated the general medical, neurological, gynaecological and urological history of 100 women aged between 65 to 93 years. Findings of urodynamic studies were analysed and upon the completion of the tests a diagnosis was made. Retrospectively, clinical symptoms were compared to urodynamic findings. An algorithm was devised by which ". . . patients may be separated with acceptable accuracy into three categories":

- treat as detrusor instability;
- major voiding difficulty;
- incompetence of the urethral sphincter with or without detrusor instability.

In the study provisional diagnoses were made on the basis of clinical examination and compared with the findings of the cystometric investigations.

The results, the authors (Hilton and Stanton, 1981) argue, indicate that urodynamic investigations are justified only in a small number of cases and should be confined to those patients showing signs of combined stress and urge incontinence. Though urodynamic procedures are fairly risk-free, the investigations cause discomfort and distress to the elderly who, not infrequently, suffer from other mental or physical impairment.

Recently this algorithm was used in a prospective study of 65 women aged 68-94 years and the results compared with subsequent urodynamic investigations (Eastwood and Warrell, 1984). These authors also developed a cystometric index which included the recognition of the desire to pass urine which, they claim, allows a measure of prediction in the outcome of treatments for detrusor instability. Thirty-six patients defined as having detrusor instability, using criteria of the International Continence Society, were scored for the degree of abnormality on cystometric investigation using a numerical index derived from the presence or absence of bladder sensations, bladder volume at which the instabilities occurred and the nature of the contractions (p.32). (Table 13).

An intervention, based on toilet training and standard anti-spasmodic drug therapy, was carried out over a period of three months, when the level of incontinence was again assessed. Based on the initial cystometric index, seven patients who had scored an initial 1-3 on the index, and a further 18 who scored between 4 and 6, were unchanged or worse. Improvements of more than 50% were found in nine low-scoring and two high-scoring patients. It was concluded (Eastwood and Warrell, 1984) that patients with the most disturbed bladder function were least likely to respond to the conventional treatment of detrusor instability by toilet training and anti-spasmodic drug therapy. Where nursing time is limited, the authors suggest, the use of the index would permit the selection of patients and concentrate resources in those for whom the likelihood of a positive outcome was better.

TABLE 13: Cystometric index of bladder instability (possible scores: 0-6)

		Score
Bladder sensation	Desire to void - present	0
	- absent	1
Sensation of imminence of micturition	- present	0
	- absent	1
Bladder volume at unstable contractions	150ml	2
	150-300 ml	1
	300 ml	0
Nature of contraction	Able to inhibit - yes	0
	- no	1
Height of unstable contraction	- 15-60 cm H ₂ O	0
	- 60 cm H ₂ O	1

Source: Eastwood and Warrell (1984)

Summary

The main causes of UI in the elderly remain unresolved though the three principal mechanisms identified in the medical model (stress, urge and overflow incontinence) have been confirmed. Whether the increase in prevalence in those aged over 65 years (Thomas *et al.*, 1980) is due to neurological deficits and is therefore 'true' incontinence or to functional impairment and disability is likely to remain the subject of debate.

The rationale for routine urodynamic studies in the elderly rests on the assumption that a firm diagnosis is unsatisfactory on the basis of clinical history and examination alone. Urodynamic investigations were shown to be an important tool to identify stress incontinence in elderly women, particularly when the presentation is not clear, and serve to minimise the possibility of inappropriate and potentially harmful medications (Hood, 1981). In cases of possible outflow obstruction, however, urodynamic investigations alone were shown to be effective in establishing a firm diagnosis in less than 20% of cases (Eastwood and Smart, 1985), though this is due partly to difficulties of communication and compliance, and partly to a problem, common in elderly subjects, of a small capacity bladder which does not permit a diagnostic flow curve. Most cases of UI in elderly subjects have been associated with an unstable bladder, but a significant 30-50% of cases, mainly women, demonstrated a normal bladder despite provocative testing (Hood, 1981; Castleden, 1985).

The usefulness and validity of algorithmic assessment has been confirmed, the authors claim, and urodynamic investigations should be confined to suspected cases of stress incontinence where inappropriate drug therapy can lead to retention of urine. The algorithm is a valuable aid to the investigation of UI which could be modified for use in the process of nursing, perhaps incorporating evidence of functional limitations.

CLINICAL AND FUNCTIONAL CORRELATES OF URINARY INCONTINENCE

Recent work by Brocklehurst et al. (1985:542) concludes that the onset of incontinence in stroke patients owes more to ". . . impairments of consciousness, immobility and dependence upon nurses than to the cerebral pathways affected".

One hundred and thirty-five stroke patients, 75% of whom were aged 65 years and above, who survived two weeks, were recruited to a study (Brocklehurst et al., 1985). Fifty-three per cent of the study sample were male and 51% had suffered a right hemiparesis. This group was seen by a researcher six weeks and one year after the onset of the stroke and subsequently at annual intervals.

Fifty-one per cent of those admitted to the study (69:135) were incontinent of urine in the first year following the stroke. In 52 of these patients the incontinence began in the first two weeks, and in 28 the incontinence was resolved.

Of the 78 patients who were found to be continent at the end of the first year, 52 had never been incontinent, and in the other 26 patients continence was regained. By the end of the first year only 14 patients (20% of the original group and 15% of the survivors) remained incontinent of urine. In these 14 patients, six had suffered a right hemiparesis and ten had been admitted to hospital. Twelve of the 14 were totally dependent upon others in activities of daily living.

Clinical findings correlated with incontinence in the first two weeks following the onset of the stroke were the score on activities of daily living, abnormal tone and picture abnormality, all of which are indicators of stroke severity. In association with a stroke, loss of consciousness, dependence upon nurses in the activities of daily living and immobility are the main precipitating causes of

incontinence; however, this is mainly a transient problem (Brocklehurst et al., 1985). While the increased prevalence of UI in stroke victims two and three years after the stroke may indicate the effect of focal lesions on micturition pathways, the effect of impaired mobility cannot be discounted (Brocklehurst et al., 1985).

A study of 114 patients in a Veterans Administration nursing home further reinforced a strong association between immobility, dependency and UI (Ouslander et al., 1987). Ninety-three per cent of the patients were male, with an average age of 70 years. The main diagnosis was of dementia, stroke or Parkinsonism in 50% of cases. The purpose of the study was to explore the association between clinical conditions, specific functional disabilities and UI.

A review of medical records was carried out to collate information on past medical, surgical and genito-urinary history and medications. Licenced practical nurses gathered data on functional, mental and continence status for all patients while primary nurses carried out specific assessments on all incontinent patients using a modified version of Katz's Activities of Daily Living Scale, with additional questions on mobility, continence and orientation to time, place and person. Urinary incontinence was defined operationally as any loss of urine that had persisted for two weeks and was not associated with an acute medical condition. Patients fitted with any form of catheter were deemed incontinent. Seventy-six patients (67%) were identified as incontinent of urine and, of these, 21% had an indwelling catheter, 52% had an external collecting device, with a further 13% having one at night only. In only 14% of patients was UI managed in other ways.

Comparisons between incontinent and continent patients showed no statistically significant difference between the groups on non-neurological or genito-urinary problems with the exception of recurrent urinary tract infections in the group of incontinent patients. Significant differences in functional ability between the groups were revealed however. Eight per cent of patients who were

independent in dressing were incontinent of urine in contrast to 95% of those patients who needed total assistance. Similarly, 95% of those who required help to transfer were incontinent in contrast to 19% of those who could manage independently. As in other studies (e.g. Isaacs and Walkey, 1964), UI was strongly associated with impairment of mental function. Urinary incontinence in nursing home patients, it was concluded, was associated more with impairments of physical and mental function than with specific clinical conditions or medications. The assessment of physical and mental function as they relate to the ability to toilet oneself independently must be an integral component of the evaluation and treatment of incontinent patients in nursing homes (Ouslander et al., 1987).

Summary

Urinary incontinence in patients in American nursing homes or in British long-term care units has been correlated with deficits impairment of mental and physical function (Isaacs and Walkey, 1964; Ouslander et al., 1987), and studies have shown that, in patients with such impairments and disabilities, continence is unlikely to be regained (Hood, 1981; Eastwood and Smart, 1985).

THERAPEUTIC OPTIONS

Introduction

The main family of pharmacologic agents used in the treatment of UI are the anti-cholinergic drugs that act directly on smooth muscle to inhibit parasympathetic innervation. Anti-cholinergic and smooth muscle relaxants act by blocking transmission of nerve impulses at post-ganglionic parasympathetic nerve endings and at the peripheral parasympathetic ganglia. Though the active constituents of such

drugs can be measured in serum levels following parenteral administration, the drug is poorly absorbed from the gut, and serum levels appear not to be significantly changed by oral administration.

Given in doses sufficiently high to have a therapeutic effect, undesirable side effects such as oesophageal ulceration and difficulties in visual accommodation can manifest themselves. Constipation, a perennial problem in the elderly, and exacerbated by the effects of reduced secretion and motility in the gut, is caused by the anti-spasmodic effect of the drug. Clinical trials of drugs are difficult to evaluate; most use small numbers only, and few have been carried out in elderly populations. To date, only studies of emepromium and flavoxate are reported for elderly populations (Williams and Pannill, 1982).

Drugs used in the Treatment of Urinary Incontinence

The usefulness of the anti-cholinergic drug emepromium bromide (Cetiprin) (Walter *et al.*, 1983) in the treatment of detrusor instability was tested in a double-blind cross-over study of 20 patients, 12 female and 8 male, with diagnosed uninhibited bladder contractions. The investigators found no statistically significant difference between the drug and the placebo over a period of eight weeks. No change was found in serum levels and no change discerned on cystometric measurements at one, three and eight weeks. Fifty per cent of those taking part reported side effects such as blurred vision and oesophagitis.

A combination of emepromium bromide (Cetiprin) and flavoxate hydrochloride (Urispas) in the treatment of detrusor instability was evaluated in a four-week randomised, double-blind, cross-over study of 20 patients aged between 54 and 88 years. Fourteen patients completed the study (Brocklehurst, 1984). One objective measure of change used in this study was the number of 'wettings' in a 48-hour period at three fixed intervals during the investigation. No

significant difference was found. Cystometric measures were also reported to be unchanged.

Curiously, subjective response to drug therapy has been positive in a number of cases despite negative cystometric measures. This has led some investigators to experiment with the use of biofeedback. Currently, in bladder training programmes, Frewen (1984) reports abandoning the use of drugs.

The value of oestrogen replacement therapy in post-menopausal women with sphincter weakness has been documented since 1941 (Salmon et al., 1941). Critical evaluation in elderly women has been the subject of only one double-blind cross-over study, however (Walter et al., 1978). A significant reduction in incontinence episodes was reported in those subjects receiving the active drug, many of whom were confused.

A wide range of drugs, including bromocriptine, indomethacin, methyl dopa and phenytoin, have been reported to be effective agents in the management of UI. Controlled trials, particularly in elderly subjects, are rarely reported. The side effects of some drugs in the elderly can preclude extensive prescription. The available evidence suggests no single drug can be prescribed for elderly, incontinent people with any certainty.

Drugs that may precipitate Urinary Incontinence

Commonly used in the treatment of a range of conditions in the confused elderly, several groups of drugs, including neuroleptics and butyrophenones, may exacerbate or cause UI (British National Formulary, 1981). Sedatives and diuretics are recognised as a contributory factor in iatrogenic causation.

Neuroleptics are considered to act by interfering with dopaminergic transmission in the brain by block dopamine receptors.

These may give rise to extrapyramidal effects and can also affect cholinergic receptors. The major group of phenothiazine derivatives can be divided into three groups (Table 14). Drugs resembling phenothiazines of group III include the butyrophenones (Haloperidol, Droperidol), widely used as a sedative in the confused and agitated elderly, and may contribute to a degree of urinary retention with the attendant possibility of causing overflow incontinence. Similarly, anti-Parkinsonism drugs of the venhexol hydrochloride type (Artane) may cause urinary retention.

Due to a dulled response, sedative drugs may also exacerbate any underlying tendency towards UI. The benzodiazepine group, particularly nitrazepam (Mogadon) and flurazepam (Dalmane), are poorly excreted by elderly persons and a cumulative, sedative effect can cause ataxia and increase confusion.

Diuretics, particularly frusemide (Lasix) and bumetanide (Burinex) are effective within the hour when administered orally and diuresis is complete within six hours. In the presence of prostatic hypertrophy, urinary retention may occur (British National Formulary, 1981, para 2.2.2), presumably due to over-rapid filling of the bladder without a countervailing voiding.

Restraint in the use of all medications in the elderly, particularly during the investigation of UI, is advocated by Williams and Pannill (1982). Particular care should be taken in the administration of the narcoleptic, anti-hypertensive agents, cholinergic agonists, anti-cholinergic, sedative and diuretic drugs. Nurses should be aware of the effect of these drugs and should be alert to the possible associations with urinary output.

TABLE 14: Effects of three groups of phenothiazine derivatives

Drug Group	Effect		
	Sedative	Anti-cholinergic	Extrapyramidal
I. Chlorpromazine	+++	++	++
Promazine	+++	++	++
II. Pericyazine	++	+++	+
Thoridazine	++	+++	+
III. Fluphenazine	+	+	+++
Perphenazine	+	+	+++
Prochlorperazine	+	+	+++
Thiethylperazine	+	+	+++
Thiopropazate	+	+	+++
Trifluoperazine	+	+	+++

Source: British National Formulary, 1981

Summary

Evidence of the efficacy of drugs in the management of UI is sparse and inconclusive. Terms are poorly defined and sample size is generally too small for reliable inference. Finally, very few studies are focused on elderly populations.

Behavioural Approaches

Introduction

Two-hourly toileting remains the method "time honoured by nurses" in Castleden and Duffin's (1981) phrase, which, in itself, does not constitute any kind of rehabilitation programme. Bladder or continence training programmes begin with a baseline assessment of incontinence incidents (Clay, 1979) and charts make a useful contribution to the assessment and evaluation of a programme (Isaacs, 1979). Such programmes are likely to fail, however, unless patients are carefully selected, with programmes implemented for limited periods of time. Authors, including Grosicki (1968) and Isaacs (1979), have reported problems in staff compliance in maintaining toileting schedules and in recording results. Castleden and Duffin (1981:188) state that:

A two hourly regimen cannot be maintained throughout the 24 hours, for long periods, even in a ward . . . [At home] relatives are not prepared to interrupt their sleep as frequently to supervise toileting, and . . . a patient kept dry on two-hourly toileting in hospital invariably becomes wet when sent home.

A behavioural approach to the management of UI has been employed in studies since the 1960s. Although five types of behaviour therapy have been identified - habit retraining, timed voiding,

prompted voiding, bladder retraining and biofeedback (Creeson et al., 1989) - in practice, only studies using techniques of habit retraining and timed or prompted voiding have been reported with confused, elderly patients. In the most usual sense, the term 'bladder retraining' is used to describe strategies of continence promotion in persons who have suffered an organic, usually neurological, lesion (Whittington, 1980). Biofeedback, as a technique, similarly has limited application in confused, elderly patients. As the strategy requires an individual patient to monitor his or her own progress towards a defined goal, the process is dependent upon cognitive awareness and a high degree of motivation in individuals who have reasonably intact motor abilities (Castleden et al., 1983; Ouslander, 1985).

In a classic study of habit retraining using operant conditioning, Carpenter and Simon (1960) showed a decrease in the number of incidents of incontinence in long-term behaviourally regressed psychiatric patients using a combination of two-hourly toileting with social and material reinforcements. Following relocation to a new ward, four groups of incontinent males drawn from a pool of 94 patients (age range 33-84 years), all of whom had been hospitalised between one and 36 years, were selected by ward nurses (Carpenter and Simon, 1960). All four groups received usual hospital care, and followed usual routines for personal care and recreational activities. The control group received no further intervention, but the three experimental groups were exposed to habit training based on conditioning at fixed intervals (two-hourly toileting), reinforced by social approval/disapproval and material rewards. Group I received toilet training only; verbal approval following appropriate use of the toilet (positive reinforcement) was given to Group II. The use of personal clothes was permitted in Group III until any incident of incontinence occurred, after which subjects were required to wear hospital fatigues for the rest of the day as a punishment (negative reinforcement).

During the four months of the study, all experimental groups showed an increase in appropriate use of the toilet and a decrease in the number of incontinence incidents. Consistent, positive change towards greater continence, both intra- and inter-group was found in association with social and material rewards. Paradoxically, the number of incontinence incidents increased in the control group.

Three factors limit the ability to transfer the findings of this study to the psychogeriatric setting: 1) the age of patients in this study shows a wide span (33-84 years), with an average age of 62 years and an average length of hospital stay of 18 years; 2) sampling procedures were relaxed (p.22) in an attempt to sustain the motivation of the nurses to proceed with the study over a prolonged period of time (four months). In selecting patients for one of three experimental groups, nurses appear to have chosen patients with whom a relationship could be developed. The significance of this interpersonal, interactive element is frequently overlooked in the classic behavioural paradigm. 3) The rigour demanded in studies derived from paradigm one science (Suppe and Jacox, 1986) is lacking and the authors, correctly, lay no claim to the ability to generalise the results to other settings. Indeed, a more rigorous sampling procedure in subsequent studies was proposed (Carpenter and Simon, 1960:18).

The habit training approach (using social and material reinforcement) proposed by Carpenter and Simon (1960) was developed further by Grosicki (1968) in a study involving two comparable wards. Thirty-six subjects between the ages of 63 and 85 years, all of whom were ambulatory and in whom UI had developed subsequent to admission, were included in the study. Following an extensive period that included an assessment of behaviour as well as likes and dislikes to identify 'reinforcers', and to establish a baseline for incontinent behaviour, subjects were checked for wetness every hour during the day. If dry, three minutes of social interaction with a nurse followed; this phase of the study lasted for 12 weeks. Following a gap of 14 weeks, in the second phase of the study, material reinforcement (tokens that

could be exchanged in the hospital canteen) was given for appropriate use of the toilet, or a fine levied if the subject was incontinent. No significant decrease in the prevalence of incontinence in the experimental group resulted from the use of social and material reinforcement.

Grosicki's work (1968) is usually cited as an example of behavioural therapy. Generally overlooked is her focus on ways in which nurses could reduce enforced dependency in elderly patients with organic brain disease. The elderly patient, she notes, was one of an "amorphous group", subject to having things done "to, for or at" him. Patients' activities were contingent upon activities scheduled for the entire ward and the patient became 'conditioned' to dependence upon staff. Grosicki (1968:305) wrote:

While nurses accept and understand the importance of intervening in patient behaviour in order to prevent, interrupt or lessen the severity of problems, what to do or how to do it has not been clear . . . nursing . . . has as its purpose the reinforcement of a patient's efforts to overcome barriers which impede effective responses to demands made upon him.

The resistance to change and obstacles that impeded the smooth passage of a research study, plus the effects of staffing shortages, were documented by Grosicki (1968) who was one of the earliest nurses to document the difficulties inherent in clinical nursing research. Further studies were recommended, using similar techniques in a more controlled environment, with staff committed to trying new ways and with a better selection of nurses (p.310).

Attention given to an incontinent patient, it was argued (Pollock and Liberman, 1974), can act as social reinforcement of incontinent behaviour, whatever the initiating cause. Given the nature and size of the population in geriatric wards (around 60 patients in American hospitals according to Pollock and Liberman (1974)), and a low staff:

patient ratio, patients who are least demanding attract least attention.

Six men, aged between 61 and 79 years, all diagnosed as suffering from organic brain disease, were included in a study to evaluate the use of social and material reinforcement in preventing or lessening incontinence in demented patients. During the first week of the study, subjects were checked for wetness every two hours and a record was kept of the number of incidents of incontinent behaviour. Subjects were required to mop up for themselves any episodes of wetness during the second week, and during the third phase of the study, which lasted for three weeks, social and material reinforcement were given when subjects were found to be dry at the time of the two-hourly check. No significant improvement over the baseline measure was shown by any subject during phases two or three of the study.

In their discussion of the results of the study, an interesting point is made by the authors (Pollock and Liberman, 1974). They question whether mopping up incontinence, sitting in wet pants or receiving sweets and cigarettes qualify as reinforcers of appropriate behaviour because of the relatively infrequent nature of the reinforcement. The behaviour reinforced in the study was not the appropriate use of the toilet but sitting with dry pants. The assumption made by the authors, that the subjects would connect toileting with dry pants, and to decrease wet pants would increase toilet use, was flawed and did not take account of the inability of the patient with organic brain disease to cope with complex information-processing. An evaluation of each patient's ability to perform the sequence of tasks needed in successful toilet use was recommended in future studies.

Although not in the behavioural tradition, either in the language used or in structure of the interventions, habit retraining as outlined by Clay (1978) is included in this section because it addresses a systematic approach to changing behaviour. Clay

(1978:23) describes in some detail the "... nursing procedure which attempts to establish a pattern of micturition". The procedure involved detailed and complex colour-coded charting of regular toileting based on a two-hourly programme initially. When a pattern begins to evolve, patients are encouraged to use the toilet at those times. Some kind of social reinforcement is advocated by Clay (1978:24), who suggests the nurse "... gives the patient encouragement by saying the condition is improving". The nurse must not, however, "... reproach the patient for incontinence of urine". Following a 13 week trial of habit retraining in 20 male patients admitted to a geriatric assessment ward, success was reported in 12 patients, partial success in a further four and failure in another four, one of whom died. With four mentally disoriented patients in a continuing care ward, only one patient regained continence in a trial lasting for five months, though another two patients showed signs of improvement. Unfortunately, these studies give no details of the characteristics of the patients, neither those who regained continence nor those who failed. One is left wondering what is meant by "partial continence".

Habit retraining is practised in some geriatric wards and units (Castleden and Duffin, 1981; Hood, 1981) with around a 50-60% success rate, provided patients are mobile, cognitively aware and motivated. None of these studies is sufficiently explicit about the characteristics of those patients who are not retrained and who are, therefore, most likely to be transferred to a long-term care ward where the strong association between immobility, confusion and incontinence has been observed.

Environment and behaviour

Though an environmental component in UI has been identified (Arie and Slattery, 1976), studies of environmental factors are limited. The rationale of the interventions is one of changing the environment to make it more intelligible to the onlooker.

Two studies focused on the environmental component of behaviour in psychogeriatric wards (Chanfreau-Rona et al., 1984, 1986). The authors argue that, in the dementing process, continence of urine as an acquired habit "starts breaking up". They suggest that: ". . . the association between evacuation and the prescribed place might be one of the first links broken . . . a consequence of difficulties in adapting to new environments" (p.273).

Three wards were involved in variations of environmental change combined with toilet training. The purpose of the study was to examine the influence on incontinence behaviour of:

- (1) simple environmental changes in the ward to improve sensory cues;
- (2) two-hourly checking for wetness and toileting, if necessary;
- (3) a toilet training programme using social and material reinforcement, and implemented at the identified peak evacuation time for each subject.

The main objectives of the study were to:

- identify the factors in the programme to account for changes in incontinent behaviour;
- determine which patient characteristics (mental state, degree of incontinence) could facilitate or impede the relearning of continent behaviour. (Chanfreau-Rona et al., 1984:278)

Environmental changes distinguished and emphasised the toilet areas with doors to the toilets painted orange, a large picture of a lady using a toilet pinned to the main door and a line of plastic footsteps leading to the area. These changes were carried out in all wards. In addition, the peak evacuation times of patients in Ward A were identified in the course of the baseline study. During the main study, the use of incontinence pads was discontinued in Ward A in an effort to build an association between dry pants and toilet use. Patients were taken to the toilet at the identified peak time, and appropriate use of the toilet was reinforced with verbal encouragement (social reinforcement) and sweets (material reinforcement). Reinforcement was maintained continuously for four weeks and partially for a further two weeks.

In Ward B, following the baseline assessment and the introduction of environmental changes, standard ward practice was reintroduced and patients were taken to the toilet at approximately four-hourly intervals. Similarly in Ward C, but nurses in this ward could reinforce the environmental changes by prompting.

The total number of patients involved in this study was 24: nine from Ward A, eight from Ward B and seven from Ward C. Initial levels of incontinence were lower; subjects had been hospital in-patients for a shorter period of time; and cognitive ability measured on the CAPE scale (Pattie and Gilleard, 1980) was higher in Ward A than in the wards used for comparison. The groups differed significantly ($p < 0.05$).

The results showed that in Ward A a "modest improvement" was realised. The average number of incontinence incidents among the nine patients declined from 13 to ten during the 12 weeks of the study. On re-assessment 22 weeks after the study had begun, the average number of incontinence incidents had risen to 12. During the period of the study one patient became fully continent. The practice of two-hourly toileting in Ward B showed a decrease in incontinence incidents in six of eight patients which was not sustained when normal ward practice replaced the study conditions. In Ward C, levels of incontinence had increased at the time of re-assessment.

Throughout the wards, it was concluded, initial levels of incontinence influenced the outcomes of the therapeutic programmes. Environmental changes alone appeared to be insufficient to produce change or to arrest deterioration of continent behaviour (p.278).

In a subsequent study (Chanfreau-Rona et al., 1986), the research design was modified to eliminate 'non-specific' ward factors that might have affected the results in the first study (Chanfreau-Rona et al., 1984). Thirty patients were selected from four psychogeriatric wards using the following criteria:

- length of stay of more than three months;
- incontinence at least once per week over one month;
- able to walk with or without aids;
- in good health (according to nursing staff).

Eight patients were male and 22 were female; the average age was 78.5 years and 90% had been in hospital for more than one year (Chanfreau-Rona et al., 1986). The purpose of the study was to see whether responses were different depending upon initial levels of incontinence. The hypotheses tested were that:

- (1) psychogeriatric patients who are truly incontinent can be retrained using behavioural methods to increase continence;
- (2) patients who are only occasionally incontinent will have a more favourable response to treatment than those who are severely affected.

(Chanfreau-Rona et al., 1986:15)

Following the introduction of environmental changes as described above, subjects included in the study in each ward were assigned to an experimental or control group. Prior to the introduction of a toilet training programme for subjects in the experimental group, a baseline study against which change could be measured was carried out for two weeks. For the first two weeks of the programme, subjects in the experimental group were accompanied to the toilet at times of probable elimination identified during the baseline study. For the next two weeks, subjects were prompted to use the toilet and given praise (social reinforcement) plus sweets (material reinforcement) for appropriate toilet use. The third phase of the study lasted for a further three weeks, continuing the programme but with reinforcement given only if the subject was dry at the identified toilet time and used the toilet appropriately. During the final two weeks of the programme, reinforcement was continued every other day. Subjects in the control groups continued to follow normal ward practice of approximately four-hourly toileting with no training programme. A second period of assessment, repeated three months later, followed the conclusion of the training programme.

For analysis of the results, subjects were divided into groups of high wetters (wet eight or more times per week) and low wetters (seven or less times per week). The number of times per week a subject was found to be wet at the beginning of the project was found to be associated significantly with outcome at re-assessment and follow-up. In the low wetting group, at the first assessment four of the nine subjects were dry, and at follow-up two of the four (one of whom died) remained dry. Two of the six subjects in the high wetting group showed a decrease in wetting on re-assessment, three showed no change and one showed an increase. By the time of the follow-up, those showing an increase in wetting rose to five subjects. Behavioural methods, it was concluded, are not effective when applied indiscriminately to psychogeriatric patients.

Two related problems, dehydration and UI, were investigated by Spangler et al. (1984) in a skilled nursing home. Sixteen non-ambulant residents were assigned to one of two groups, A and B. The study design incorporated five phases:

Phase 1 in which a baseline was established in both groups who were receiving standard nursing care.

Phase 2 in which subjects in Group A were offered a drink and an opportunity to use the toilet each hour. Subjects in Group B received standard nursing care.

Phase 3 in which the interventions were reversed, with subjects in Group B being offered the drink and the use of the toilet while those in Group A received standard nursing care only.

Phase 4 in which both groups received standard care.

Phase 5 in which both groups received the intervention.

The interventions were claimed to be successful with no episodes of incontinence observed in 50% of the subjects. These findings are not entirely surprising, however, since standard practice in the nursing home was to check each patient every three hours for wetness, but to take patients to the toilet only if the patient asked.

Prompted voiding

Creeson et al. (1989) studied the effect of prompted voiding and socialisation in 85 nursing home residents, aged between 65 and 99 years, who suffered from incontinence. Eighty-one per cent of the subjects were below the range of normal cognitive function as measured by Folstein's Mini-Mental Status Test (1975), and 80% had scores as measured on the Katz Activity of Daily Living Scale indicative of moderate to severe functional limitations. The three main questions addressed were:

- Does prompted voiding and socialisation affect the ability of aged female residents to achieve urinary continence ?
- What are the functional and cognitive parameters related to UI in aged female nursing home residents?
- Can patterns of continence/incontinence be identified and used in planning care?

As the study was conducted in four separate nursing homes, random allocation of subjects to treatment groups was not possible. Instead, patients were assigned to a prompted voiding group (30 subjects), a socialisation group (27 subjects) and a control group (28 subjects). For those subjects exposed to prompted voiding, nursing assistants, following instruction and training, simply approached each subject hourly and asked if help was needed to use the toilet. Regardless of the response, a check on subject's wetness/dryness was made. In the group exposed to socialisation, two to three minutes of social contact were spent with the subjects each hour with no mention made of toileting. If the subject expressed the need to use the toilet during the interaction, assistance was given and recorded. Again, a wetness/dryness check was carried out. The usual routine for checking incontinence every two to three hours in each home was followed for the control group.

After two weeks of prompting and socialisation, the wetness/dryness data were searched for emergent patterns and individualised plans of nursing care were developed by nursing home staff working

with project staff. Four weeks after the introduction of the experimental conditions, the results showed the group exposed to prompted voiding was not significantly different from the group exposed to social interaction, although this latter group had initially been less incontinent than the prompted voiding and the control group. Both groups differed markedly, however, from the control group. The improvements shown by subjects in the prompted voiding group suggest this type of intervention can be useful in decreasing episodes of incontinence (Creeson et al., 1989:124).

A study of prompted voiding using social and material reinforcement was carried out in two 'non-psychiatric nursing homes' where, nevertheless, 95% of the patients were diagnosed as suffering from organic brain syndrome or senile dementia (Schnelle et al., 1983). In one hospital, nine patients aged between 62 and 93 years were allocated to groups of four and five subjects respectively, one group to act as the intervention or experimental group and the other to act as control. In the second hospital, two groups of six patients each (age range 48-96 years) were included in the study. No patient was ambulant independently and only two could assist the nursing staff in transfer to a commode.

The baseline study consisted of hourly checks to confirm wetness or dryness. The interventions applied to the experimental groups were prompted voiding at hourly intervals with social approval for dryness and appropriate toilet use, and social disapproval for episodes of incontinence. Improvements in the experimental groups were obtained rapidly and maintained over a 21-day period. In these groups the frequency of correct toileting increased by 45%. The 'dramatic' change in toileting behaviour ". . . supports the contention that nursing home incontinence is more a staff-patient management problem than a patient relearning problem", according to the authors (Schnelle et al., 1983:40).

The problems of staff management, however, are highlighted in comments on staff absenteeism and turnover (80-100% annually for

nursing assistants), and the authors acknowledge the demands made on staff in fulfilling even basic nursing care when the staff:patient ratio becomes distorted: the study was completed only with 'strong' supervisory pressure.

In a replication study Schnelle et al. (1989) confirmed the efficacy of prompted voiding as a means of managing UI in elderly patients in nursing homes. In this study, however, specially recruited staff carried out the interventions. The key question is whether such an intervention could be incorporated in ward practice.

Summary

Behavioural approaches to the management of UI have met with only limited success. Poor results have been attributed to lack of compliance from nursing staff. Little consideration appears to have been given to ways in which behavioural approaches can be merged with nursing practice.

PSYCHOLOGICAL APPROACHES TO UNDERSTANDING BEHAVIOUR

Introduction

In addition to an understanding of the basic processes of normal ageing defined as a progressive loss of adaptive ability (Woods and Britton, 1985), psychologists in the United Kingdom and in the United States have become interested in the behavioural problems, particularly those associated with the dementing illnesses (Eisdorfer et al., 1981; Hanley and Hodge, 1984; Woods and Britton, 1985). Stimulation, reality orientation and behaviour modification are all discussed in recent textbooks dealing with psychological approaches to dealing with the confused, elderly person. A decline in UI has been observed in conjunction with several of these approaches,

though the underlying rationale is not clear with the exception of strategies associated with a behavioural approach (Hodge, 1984). The problem of UI in mentally handicapped persons has been tackled effectively using the principles of behaviour modification (Tierney, 1973), but Holden and Woods (1982:47) are somewhat sceptical of its usefulness in problems associated with the dementing illnesses, concluding that ". . . although a promising approach, as yet there remains a lack of convincing evidence for its effectiveness". In this section the conceptual issues are discussed and it is argued that a greater emphasis on the relationship between person and environment is needed.

Behaviour

Introduction

Based on the twin assumptions that behaviour is a function of person and environment and the interaction between person and environment (Lewin, 1935), and that behaviour stems from, and is established by, past experience and maintained by present experience, behavioural psychologists have identified three classes of behaviour (covert, reflex and operant), and three models of learning (classical, social and operant) which have formed the basis of the behavioural approach (Barker, 1982). Though interactions among the three classes of behaviour lead to the production of complex behavioural strategies used to resolve the problems of everyday living (Barker, 1982), only classical and operant conditioning are discussed.

Classical conditioning

The term classical conditioning is used to describe a process by which reflex or autonomic behaviour is learned. First described by the Russian psychologist, Pavlov, in a series of experiments on dogs, it was noted that a response of salivation accompanied the stimulus of food (S-R). In subsequent experiments the dogs learned to

associate the sound of a tuning fork with the presentation of food; the dogs became conditioned to associate the sound of the tuning fork (the conditioned stimulus) and responded by salivation (the conditioned response). Classical conditioning has been described as:

. . . the formation or strengthening of an association between a conditioned stimulus and a conditioned response through the repeated presentation of the conditioned stimulus in a controlled relationship with an unconditioned stimulus that originally elicited the response. The original response to the unconditioned stimulus is called the unconditioned response; the learned response to the conditioned stimulus is called a conditioned response.

Each paired presentation of the conditioned-unconditioned stimulus is part of the process of conditioning known as 'acquisition' . . . With repeated paired presentations on the conditioned and unconditioned stimulus, the conditioned response should appear with increased strength and regularity in a procedure known as 'reinforcement' . . . When the reinforcement is removed (by the omission of the unconditioned stimulus), the conditioned response is gradually diminished or 'extinguished'.

(Hilgard and Atkinson, 1967:263-264)

Operant conditioning

Operant conditioning supplements classical conditioning and is defined by Hilgard and Atkinson (1967:280) as: ". . . the strengthening of a stimulus-response association by following the response with a reinforcing stimulus".

Skinner (1957) made a distinction between respondent behaviour that arose from a stimulus-response process and a particular form of associative learning concerned with the relationship between the individual and his or her environment. In respondent behaviour, the response is controlled directly by the stimulus, as in the

contraction of a pupil of the eye in response to a bright light; in operant conditioning the pathway is indirect, operating on some aspect of the environment to produce a desired or undesired effect. In Skinner's classic (1953) experiment, a rat learned to press a bar to receive food; the food reinforced the behaviour of pressing a bar. When pressing the bar no longer resulted in the provision of food, the behaviour of bar-pressing was quickly lost or 'extinguished'.

Behaviour modification

When the principles of operant conditioning, developed in the setting of the laboratory, are combined with social learning theory and the methods of applied behaviour analysis, the term 'behaviour modification' may be used to describe techniques aimed at changing or modifying maladaptive behaviour (Schorr, 1987). The basic tool is the management of contingencies by the manipulation either of a situation or the consequence of a behaviour. Rewards or 'tokens' are given or withheld, contingent upon appropriate behaviour. Behaviour modification has been defined as the application of the principles and techniques derived from the experimental analysis of behaviour to a wide range of human problems. For the application of these principles in the shaping or modification of behaviour, an analysis of the antecedents as well as the consequences of a behaviour is required (Turner, 1980).

Skinner (1957), the architect of behaviour modification, favoured an inductive approach and was insistent that research should be descriptive without being theoretical. Using strict controls he developed an inductive theory of operant conditioning to study the fundamental principles of reinforcement under laboratory conditions. He insisted that the mastery of even complex behavioural tasks could be broken down into a series of stimulus-response associations (Hilgard and Atkinson, 1967) and, since the 1950s, a school of applied psychology known as applied behaviour analysis has developed around the principles of behaviour modification.

Skinner argues that animal behaviour could be analysed within the framework of a three-term contingency in order to examine the relationship between responses, reinforcers and discriminant stimuli. A central assumption of behaviour modification is that the same principles can be applied to human behaviour.

In the original, a-theoretical stance adopted by Skinner and his school, the aim was to provide therapy and to change behaviour on a pragmatic basis, but the failure to transfer results to the real world setting, and the lack of persistent change, has led to doubts about the fundamental principles involved. As Lowe et al. (1987:156) have pointed out, human beings are very different from animals in their responses. Once human beings have acquired language: ". . . [human beings] respond verbally to their responding; they comment on contingencies to themselves; they reflect; they consider possibilities; they imagine possibilities; they formulate rules".

Though experimental behaviour analysis and applied behaviour analysis are derived from a common intellectual and structural frame of reference (Schorr, 1987), since the 1960s an evident split has taken place with applied behaviour analysts less willing to conform to the prescriptions of operant learning 'theory'. Differences in the aims as well as the areas of research conducted, and in the degrees of precision with which studies can be conducted, have been reported by applied behaviour analysts. The single biggest difference lies in the fact that experimental analysts are concerned with animal experiments and have little experience of working with human subjects. Azrin (1977:143), an advocate of behaviour modification, shows the identification of reinforcers to be neither simple nor straightforward and argues that:

. . . therapy cannot be based on reinforcement alone . . . changes in the initial reinforcement concept were required . . . The final treatment in every case required improvisation, detours and innovations because of unanticipated problems unanticipated by the initial analysis.

The point was reiterated by Lowe et al. (1987:160), who comment: ". . . in spite of what is commonly believed, changes in target behaviour cannot be solely or directly the result of reinforcing contingencies". Similarly, after several years of trying to implement a programme of behaviour modification, Respucci and Saunders (1974) conclude that implementation in a natural setting presented problems mainly because the methods of operant conditioning were precise, demanding and difficult to implement. The principles of behaviour modification were inappropriate for an understanding of behaviour and learning in a natural setting; the techniques required that the person trying to modify behaviour had access to considerable amounts of resources, as well as extensive control of the environment.

Since its beginnings in the 1950s, a continuum of practice has emerged with those at one end who adhere strictly to the principles as enunciated by Skinner, while at the other end are those who have chosen a more eclectic approach (Schorr, 1987). Though in principle the progression from basic to applied research is sustained, in practice the debt to research is acknowledged only in the term 'applied' behavioural research. The result has been a confused terminology where the term 'behavioural therapy' is seen by some as synonymous with the term 'behaviour modification' (Schorr, 1987).

Critique of an approach based on operant conditioning

Principles of operant conditioning were derived from studies of animals under controlled conditions, and the dominant assumption when applied to human subjects is that the same principles govern the behaviour of human beings in a continuum, animal-human, in which only differences in degree and complexity are possible. In this model man is viewed as a reactive agent and behaviour is caused by external forces (Lowe et al., 1987). The important mediating role of language in the emergence of rule-governed rather than contingency-shaped behaviour has been supported in recent studies, and the failure to take into account the central and controlling role of

verbal behaviour has compromised models of operant learning (Lowe et al., 1987).

The main criticism of the conventional model of behaviour rests on an inadequate conceptualisation of behaviour (O'Connor, 1987). In the usual form, behaviour is viewed as a representation or manifestation of some other process. Early theorists, O'Connor (1987) argues, considered only simple behaviour, employing the simple S-R formulation to explore responses and reinforcement. In the functional model associated with mainstream behavioural psychology, behaviour is viewed as a collection of stimulus properties and environmental contingencies in which an orderly relationship is assumed between stimulus and response. In the constitutional (or biological) model, behaviour is seen as the product of an internal hierarchy, typed according to the organisation of the central nervous system. Behaviour is then reduced to a biological or mental mechanism whose function lies in its adaptive value to the organism (Riegel, 1976; O'Connor, 1987).

In the experimental and controlled situation, the behaviour of an animal or person ". . . is represented by his or her response deduced from an observation of the stimulus" (O'Connor, 1987:354). In everyday life, however, the notion of behaviour is concerned with an individual's actions and is a response from which the stimulus can only be inferred (O'Connor, 1987).

O'Connor's explanation of everyday behaviour is based on a holistic-humanistic view of man in which the living organism is a source of purposeful action. Matter behaves, but man acts; it is the meaning attached to behaviour that converts 'behavioural components' into behaviour streams or episodes through planning and centrally coordinated organisation (Menzel, 1978).

In everyday life a person may scratch in response to an itch, or may refrain from scratching. He or she may use the toilet in response to an urge to empty the bladder, or may anticipate diffi-

culties in reaching a toilet when needed, or delay evacuation until an appropriate place is reached. But the irritation or the sensation of fullness cannot be observed and can only be inferred from subsequent action. A constellation of behavioural components or acts may be agglomerated into one unit of 'behaviour' in the everyday sense of the word. Thus, any behaviour can be understood only by describing those processes that made its emergence possible. This point is emphasised in Reid's (1975:104) account of nursing practice in relation to the cleansing of an incontinent patient when she observed that the act of cleansing was the outcome of a ". . . constellation of events that culminated in a nurse cleansing an incontinent patient".

Human activity is predicated upon a certain image of the world (Boulding, 1985) and certain places acquire particular meaning and expectations of behaviour that occur in that setting. This may explain the increased confusion and disorientation experienced by dementing patients when taken away from well-known and familiar settings and places. Two kinds of place knowledge have been identified: knowledge of where some place or thing is; and knowledge of what that place or thing represents (Russell and Ward, 1983). These two kinds of knowledge are used in the assessment of cognitive ability in the confused, elderly person (Isaacs and Walkey, 1964).

Alternative perspectives: the contextual model of behaviour

In what O'Connor (1987:356) terms the 'contextual model', behaviour was viewed neither as representation, as sign or as function, but as ". . . expressing logical order within the actions of an individual". In this model behaviour is seen as an ". . . act, organised in relation to other acts at the time" (O'Connor, 1987:364). It is the loss of ability to plan and organise everyday behaviour that is a consequence of the dementing illness. The key issue in relation to the institutionalised and dementing elderly person is how everyday behaviour is organised.

One difficulty with the contextual model is concerned with the notion of intentional behaviour. Most definitions of UI stress the involuntary nature of the act. Several operational definitions have used the term 'inappropriate', e.g. inappropriate time, or inappropriate place (Agate, 1970; Feneley, 1980). Hallam (1987) has pointed out, however, that meaningless behaviours are inappropriate forms of a meaning act and the social significance of a meaningless act is based on a tacit assumption of what is deemed normal.

An emphasis on a natural sciences approach in psychology has led to problem behaviours becoming treated as entities, comparable to pathological, clinical disorders (Hallam, 1987). But the nature and content of a problem is generated and given meaning by the context from which it arises. If:

. . . behaviour is placed in the context of possible response processes rather than in a fixed stimulus world, response processes can be understood independently . . . all aspects of a person's behaviour are related in a contextual rather than in a causal fashion; parts of an act cannot cause one another . . . [We can view] acts as emerging from their context. This emergence is understood by description not by explanation of the context.

(O'Connor, 1987:367)

O'Connor's (1987) appeal for consideration of contextual elements is to be found in those branches of psychology that study the interface between the physical and social environment. Environmental psychology, ecological psychology and behavioural ecology have emerged in response to the conceptual and methodological problems inherent in the study of the inter-dependencies and interactions of person-environment relations.

Summary

Hodge (1984) gives four reasons for the lack of research into the use of behaviour modification in relation to the dementing illnesses.

1) Psychologists in the United Kingdom have become involved in geriatric care only recently. 2) As memory deficits are characteristic of a dementing illness, an approach based on learning would be inappropriate. 3) As dementia is a progressive illness, any gains made would soon be lost. 4) When appropriate research has been carried out, diagnostic problems and a lack of homogeneity within experimental groups has compromised findings. In addition, organismic and environmental factors interact to produce the problem behaviour (Hodge, 1984) and a comprehensive analysis of biological as well as environmental factors is required, somewhat greater than simply the antecedents and consequences used in the conventional A-B-C model (Turner, 1980).

Environmental Psychology

Introduction

As the boundaries of the field are blurred, it is not entirely clear whether environmental psychology is a unique domain in which substantive concerns are framed in an inter-disciplinary context or whether it is a sub-discipline of psychology. According to Newcomber and Bexton (1978), concepts and research methodologies were borrowed from psychology and sociology to create the theoretical frameworks of the 1970s. Subsequently two streams converged; one came indirectly from the discipline of architecture, while the other can be traced to the psychological concept of competence and the biological concept of adaptation. The need to consider the effect of person-environment interaction and transaction has been emphasised by psychologists with an interest in adaptation in later life (Lawton and Nahemow, 1973; Labouvie-Vief, 1982 Kahana, 1976; Hussian, 1981).

Constructs used by this group reflect an interest in adaptive behaviour, with phrases like 'congruence' (Kahana, 1976); 'compensatory behaviour' (Hussian, 1981) and 'selective optimisation' (Baltes and Willis, 1977). These have combined in studies of

competence and adaptation to a changed environment (e.g. Lawton and Nahemow, 1973; Kahana, 1976; Tobin and Lieberman, 1976). A major concern is to provide an account of the relationship between person-environment by extending the boundaries of conventional behavioural psychology beyond what Craik (1970:10) describes as ". . . the immediate response to an immediate stimulus" to include a study of behaviour over a longer span of time and in relation to a larger environment. In this molar and multidimensional perspective the focus is on an analysis of interrelations among persons and their psychosocial milieu rather than on discrete stimuli and behavioural responses, and an understanding of behaviour at the subjectively meaningful level at which people plan everyday life is supported. One result of this integration of differing perspectives has been a renewed acknowledgement of the need to develop dynamic and transactional models to permit the study of the 'bidirectional relationship' between environment and behaviour (Stokols, 1978:278).

Person-environmental relations: transaction

In studies of the impact of the environment on the daily lives of old people living in institutions, a major concern has been with the nature of the interaction between person and environment (Kleemeier, 1961; Lindsley, 1964; Lawton, 1973, 1975; Lawton and Nahemow, 1973; Kahana, 1976; Proshansky and Ittelson, 1976; Windley and Scheidt, 1980). A recurring theme in many studies has been ways in which the individual can act to 'optimise' his environment (the term 'optimisation' refers to a process whereby individuals opt to maintain or change their environment to achieve certain goals (Stokols, 1978)). The notion of human-environment optimisation is based on a model of cyclical feedback between human cognition and behaviour reflective of the transactions between the individual and the physical environment. It is suggested that: ". . . a person orients to the environment; operates on the environment; is affected by the environment; and evaluates the quality of the environment" (Stokols, 1978:259).

The transactional view of the relationship between person and environment developed by Kleemeier (1959) and Kates and Wohlwill (1966) created a schema with two dimensions: one that is internal, cognitive, symbolic and active, and another that is external, physical, response and reactive (Figure 4).

The internal, cognitive dimension, related to ways in which people interpret and evaluate their environment, has been the subject of extensive study concerned with those processes through which information about the spatial environment is acquired, stored and recalled (Stokols, 1978). In the external, behavioural dimension are held two modes: the operative and the responsive. The work of Barker (1968), Wicker (1979) and Willems (1974) in the associated fields of ecological psychology and behavioural ecology, which fall within the operative mode, are concerned with ways in which people act to modify their environment. Studies in the responsive mode are concerned more with adaptive behaviour - in the face of environmental press, for example. Kahana (1976) sought to identify the kind of adaptive behaviour needed to achieve congruence between individual needs and demands created by the environment. In a similar vein, Lawton (1975) developed a model, based on Lewin's (1935) interactionist view of behaviour, to examine the relationship between individual competence and environmental press.

Person-environmental relations: individual competence and environmental press

Drawing on Murray's (1938) concept of 'environmental press', Lawton and Nahemow (1973) argue that behaviour in the elderly was a reflection of the interaction between individual competence and environmental press. Increased vulnerability to the context in which a life is led has been associated with changes in biological as well as mental health (Lawton, 1981). These biological, physical and mental factors termed 'individual competence' are contrasted with the physical environment (including other relevant individuals) and the cultural context within which the individual lives and acts;

FORM OF TRANSACTION

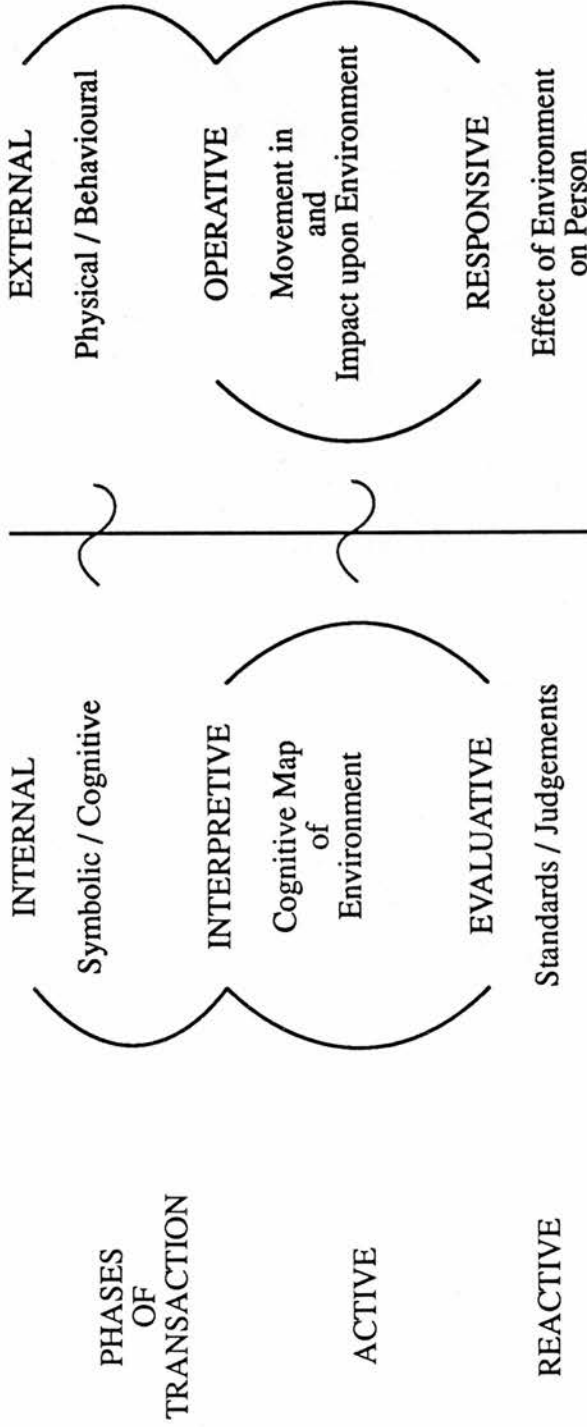


FIGURE 4: Person-environment relations: transaction

(adapted from Stokols, 1978)

equilibrium or homeostasis is achieved only when personal competence and environmental press are balanced. At this level, the individual is coping with the demands of the environment. But a decline in personal competence, or an increase in environmental press, is marked by the onset of stress and the behavioural outcome may be negative:

Thus, a small amount of change in press strength may make a major difference in the quality of outcome for a person of low competence . . . This is known as the environmental docility hypothesis . . . as individual competence decreases, the environment assumes increasing importance in determining well-being. (Lawton, 1981:22)

A similar point is made by Lieberman (1975:133) who noted the greater adaptive effort required to cope with the demands of the environment when cognitive or physical function is impaired since these are crucial resources to aid adaptation: ". . . at the lower limits the physical capacity of an individual may be the most important predictor of adaptive failure". Failure of adaptive effort leads to crisis (Lieberman, 1975).

As defined by Lawton (1981), competence is the upper limit at which an individual is able to function in the areas of biological health, sensation, perception, cognition and motor behaviour. These functional abilities coalesce in the ability to cope with, and master, the environment. But, as they cannot be measured directly, they must be inferred from the ability to perform acts of self-care.

Though personal competence can be measured and described, it has proven more difficult to measure environmental press, partly because of the sheer complexity of the concept of environment. Repeated calls for the development of taxonomies of environment have been made (Newcomber and Bexton, 1978; Stokols, 1978), and a diverse range of classifications has emerged, each developed for the purpose of a single study (Windley and Scheidt, 1980). Russell and Ward (1983), for example, define environment as a complex of immediate and distant places, psychologically arranged in a hierarchy. In contrast,

Lawton (1983) considers five aspects of environment to be critical for an understanding of environmental press.

Implicitly acknowledging the interaction between person and environment, transactional models are static, however, and tend to ignore ". . . the possibility that the form and direction of human-environment relations change in a dynamic and cyclical pattern" (Stokols, 1978:266).

In a study to explore views about UI, Schwartz found that time was important in different ways to patients and nurses in an institution. Patients reported a sense of what Schwartz terms 'time-loss':

. . . clocks lost meaning . . . for hospitalised patients, lights on-and-off, and feeding - either meals or tea - were the major daily landmarks. But for the nurses, the problem lay in the speedy passage of time in a busy ward. "There isn't a nurse anywhere who wouldn't tell you it's basic in toilet retraining to toilet the ward every two hours. But you do the arithmetic with me. This week we've lost one aide by retirement . . . one on holiday . . . one off sick . . . all our experienced pupil nurses are gone . . . We've taken on a parcel of beginners who need a good deal of help . . . we've more than the usual number of highly dependent patients who have to be fed and turned and really tended. So, where are the hands to do this two-hourly toileting? I know it needs to be done, and I want to do it, but the hands of the clock work faster than the hands of the staff".

(Schwartz, 1977:199-200)

Temporal change is integral to person-environment interaction (Russell and Ward, 1983). Although studies of the physical environment of older people, their dimensions and characteristics, have been instrumental in identifying social and human problems associated with institutions, they have informed less well on the effects of changes at the micro level. The main criticism of the transactional perspective then rests on its inability to deal with the dynamics of the environment, particularly change. A dialectical perspective has been proposed by Windley and Scheidt (1980) and by

Jeffrey and Saxby (1984) as a heuristic framework for understanding the changes of later life through exploration of the mutual interaction of person and environment. This approach seems to have been adopted by Lawton (1985) in his more recent work.

Person-environmental relations: a dialectical perspective

With origins that go back to an old tradition of argument and understanding originating in Greek philosophy (McKeon, 1954), support has been gained from a group of psychologists for the use of a dialectical perspective as a means of understanding a complex situation (Riegel, 1976; Datan and Reese, 1977; Labouvie-Vief, 1979). A dialectic is a form of dialogue that has been described as thesis-antithesis and resolution-in-synthesis (McKeon, 1954; Ward, 1967). As a method of discovery through which terms are defined, ideas clarified and situations analysed, the analysis of practical problems is suited to this form of understanding.

Critical of an emphasis on balance, equilibrium and homeostasis, Riegel (1976:691) advocates:

. . . the study of the temporal order of concrete events . . . [suggesting that] in order to analyse event sequences and contradictions, the dialogue should serve as a basic form of enquiry . . . [as] dialogues represent short-term changes.

As Riegel explains, a dialogue has temporal structure; speakers alternate in a presentation, with each successive speaker's statement a reflection of its precursor. Riegel uses the term 'reflective co-ordination' to describe the reaction and response of one participant in a dialogue to the other. A key feature of a dialogue is an ability to accommodate short-term change and a prerequisite is temporal coordination. If that temporal coordination is absent or broken:

. . . tension, antagonism or opposition develops between the different parts of the system . . . opposing tendencies . . . come into opposition on the basis of contradictions inherent in the process of interaction. (Moccia, 1985:32)

The four dimensions of person-environment interaction identified by Riegel (Figure 5), though not dissimilar to the four modes of person-environment transaction, have important distinctions. Both have inner and outer dimensions but, in the transactional perspective, the mechanism of change is implicit. In a dialectical

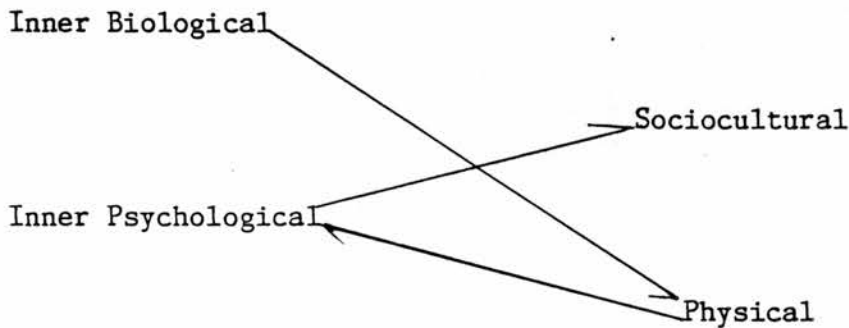


FIGURE 5: Dimensions of the dialectic between person and environment

Adapted from Riegel (1976)

perspective the inner and outer dimensions are incorporated, permitting understanding of the 'flow of events' that bring about change or maintain processes of inertia. In the sciences, a dialectical explanation consists of the disclosure of those inner and outer conflicts that bring about the emergence of new entities endowed with new qualities, or that maintain certain processes.

As a result of these conflicts and contradictions, the flow of the dialogue cannot progress and, when two sequences are out of step or asynchronous (as in talking 'at cross purposes'), a crisis is said to happen (Riegel, 1976). The 'crisis' that happens to disrupt a

dialogue is analogous to the crisis in adaptive effort identified by Lieberman (1975) and by Lawton (1982). A crisis can originate along any dimension and:

. . . crises originating along the inner-biological dimension such as illness, incapacity or death, are rarely synchronised with inner psychological events and, therefore, create critical problems for the person affected . . . successful synchronisation constitutes the goal . . . whenever a crisis is resolved, a synchronising re-interpretation has taken place. (Riegel, 1976:693)

In person-environment relations the origin of a crisis may be in an inner dimension, either biological or psychological, or in an outer sociocultural or physical dimension. It is through reflective coordination between inner man and his outer environment which surrounds him (Ittelson, 1975; Riegel, 1976) that progress and development takes place. This ability to indulge in reflective coordination, to ". . . think in words using inner language . . . to plan and monitor motor acts" (Thompson, 1986:8), appears to be lost in the dementing state.

In a dialectical perspective, sensory deficits (inner biological) create an imbalance or asynchrony with the outer, physical environment which has a reciprocal effect and impact on inner, psychological mechanisms. In terms of a dialectical perspective, UI can be understood as an (inner biological) "pathological intrusion" (Lawton, 1983), involving the cortical controlling mechanism (Brocklehurst and Dillane, 1965), manifest as an episode of UI (outer physical), with a reciprocal effect on self-esteem (inner psychological), possibly leading to social isolation (sociocultural). Clearly, there is an instance of asynchrony and, therefore, crisis. Such ". . . crises could be prevented if synchronisation could be achieved prospectively" (Riegel, 1976:694).

Individuals who seek to help or guide others ". . . function as an intermediary", according to Riegel (1976), between the person

seeking or needing help and the wider environment. The task of the helper is to aid synchronisation and to resolve or prevent a crisis.

Lawton's (1975) environmental docility hypothesis might also be viewed within the four dialectical dimensions, again emphasising the synchronies and asynchronies along planes, two of which represent individual competence and two of which represent environmental press (Windley and Scheidt, 1980). Competence is viewed as the adequacy with which an old person is able to resolve crises that arise from an asynchrony between inner man and his outer environment (Lawton, 1982).

However, research into person-environment relations has been hindered by difficulties in finding ways to describe the environment in functionally meaningful terms (Parr, 1980). Greater emphasis has been placed on people's perceptions of the environment rather than on the effect of environmental press on everyday behaviour in the elderly. Parr (1980) has argued that, if the purpose of research is to influence the design and content of environments in which the elderly live, data of a more concrete kind are required. Though the development of taxonomies of environments has been recommended (Newcomber and Bexton, 1978; Stokols, 1978), each system has been developed to meet the needs of a single research study. Windley and Scheidt (1980) argue that, as the gross features of environments change only slowly, studies that incorporated taxonomies of whole environments were of limited usefulness. They propose taxonomies based on the functional attributes of environments and settings as these can be more readily linked to three dialectical concerns associated with competence and behaviour:

- the reciprocal interaction between person and environment;
- the synchrony/asynchrony of such interactions;
- the sensitivity of person/environment interaction to change over time.

Two purposes are served by the use of the attributes of settings for the analysis of person-environment relations. Firstly, the

researcher is alerted to changes that take place in the function of a setting, e.g. the change from a place to sleep to a place in which meals are taken, not uncommon in a hospital setting. Secondly, changes in the function of a ward or unit alert the researcher to the temporal sequences of behaviour. Changes in time-frames might be significant in an understanding of the person-environment interactions of dementing old people. One need think only of the well-documented 'sundown syndrome' characterised by increased confusion and wandering that seem to happen when the quality of light is changing. Eleven attributes of environmental settings are proposed, and each identified attribute provides the frame or context for framing the interaction of internal individual (biological/psychological) and external environmental (social/physical) processes, combining rather than separating social and physical attributes (Windley and Scheidt, 1980). Moreover, these frames set contextually relevant questions (Figure 6).

An understanding of person-environment relations is important for researchers from a theoretical perspective and to guide research, and for practitioners from an applied viewpoint. The simple question, "How do people (nurses, patients) behave in a given environment?", requires a prior conceptualisation of the term. Parr (1980) suggests that the best way to study a complex social system without destroying its integrity is to examine one kind of behaviour and to look at possible interactional influences on the occurrence of that behaviour. Changes in the competency of elderly persons can be comprehended only through the study of concrete events and situations as they interact with internal and external to the person, emphasising changes brought about by dialectical conflicts and contradictions. The model first described by Lewin (1935), that behaviour is a function of person, environment and person-environment interaction, and expressed as:

$$B = f (P, E)$$

Attributes	Related Questions
1. Sensory stimulation	To what extent and in what ways can environmental stimuli help to compensate for age-related changes?
2. Legibility	How well is the environment organised for ease of understanding?
3. Comfort	What effect does an ambient temperature, lighting, seating have on perceptions of comfort?
4. Privacy	How much privacy is afforded to each individual?
5. Adaptability	Can this environment be rearranged to accommodate new or different patterns of behaviour?
6. Control	To what extent is there personal ownership of space?
7. Sociality	Is social contact encouraged (sociopetal) or discouraged (sociofugal)? How much interaction takes place?
8. Accessibility	How easy is it to travel across and through this environment? What are the significant barriers?
9. Density	Is there a sense of perceived overcrowding?
10. Meaning	What meaning does this environment convey to those who live and work in it?
11. Quality	What are the aesthetics of the environment as perceived by those who live and work in it?

FIGURE 6: Attributes of environments relevant to competent functioning in elderly persons

Adapted from Windley and Scheidt (1980)

has been extended by Parr (1980) to take account of some form of reflective coordination as described by Riegel (1976) and Thompson (1986) to develop a reflective four-, rather than a three-, component model by introducing the concept of mediator (Figure 7).

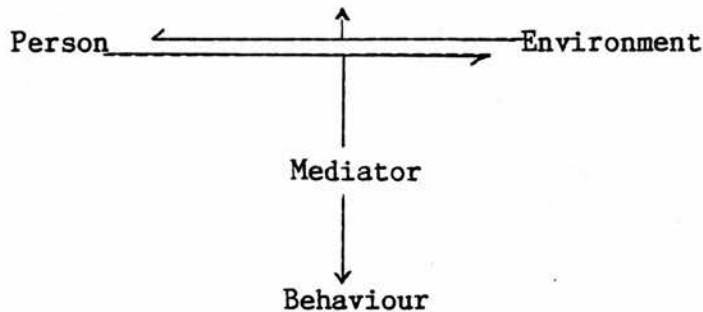


FIGURE 7: Representation of Parr's (1980) four-component model of person-environment relations

Parr's (1980) concept of 'mediator' appears to be synonymous with Riegel's (1976) notion of an intermediary to restore synchrony. In the next section, the goodness-of-fit between these models developed within the discipline of psychology and conceptual models developed to guide nursing practice are discussed.

Summary

It was argued that the approach known as behaviour modification or applied behaviour analysis was inappropriate to understand maladaptive behaviours in the dementing elderly. Human behaviour is a phenomenon that has multidimensional properties that cannot be represented adequately using a single dimension derived from basic animal research (Evans and Litz, 1987). Simple and easily quantified aspects of behaviour, usually single responses, or alternatively, functional analysis of those conditions that might be controlling the behaviour, cannot fully represent its complexity. As Jeffrey and Saxby (1984:259) observe:

. . . in trying to influence confusion and other aspects of disordered functioning it is necessary to take into account physical and sociocultural aspects of the environment . . . [this requires] a focus upon the nature of the environment-person interaction.

(Jeffrey and Saxby, 1984:259)

Conventional studies of behaviour contain little information about the setting and emphasise the characteristics of the environment as static. To resolve this dilemma, the use of a dialectical perspective has been proposed. Lawton (1985:505) has suggested that many older people must engage in ". . . a dialectic of autonomy/support, and its variant, individuality/sociality", in which an active process of cognitive restructuring is needed to get to know one's environment. It is the inability to engage in such a process that is characteristic of a dementing illness. The key question then becomes, in which ways, and to what effect, can nurses mediate in this process?

With an emphasis on the reciprocal causality between person and environment, the horizontal flow of event sequences leading to the identification of discontinuities and contradictions is encouraged by the use of the dialectical method. Just as it is not possible to understand problems associated with the preparation of food without taking into account the social and physical attributes of the kitchen, the knowledge and experience of the cook, the availability of raw materials, the type of fuel used, and even the height of the work surfaces, the problem of UI in psychogeriatric wards cannot be understood without the social and physical attributes of the wards, the knowledge and experience of the nursing staff, and the ways in which the work of the ward is organised, all of which were issues identified previously by nurse researchers (Norton *et al.*, 1965; Reid, 1975; Baker, 1978; Miller, 1980; Wells, 1980).

THE DEVELOPMENT OF KNOWLEDGE

Introduction

As an emergent discipline, nurse teachers and research workers in the 1950s adopted the then prevailing view of the scientific method and the nature of scientific knowledge (Silva and Rothbart, 1983; Suppe and Jacox, 1985), often struggling to reconcile a hierarchical and deductive system with a professional practice discipline. From the beginning of the 20th century, influential, mathematically-oriented philosophers like Ayer, Carnap, Hempel and Nagel understood the nature of scientific knowledge as a branch of logical reasoning known as logical empiricism or positivism. It was believed possible to demonstrate the existence of formal structures and to identify the nature of scientific laws, principles and hypotheses by their characteristic logical form. Logical, observational and theoretical terms were included in a deductive system that comprised basic concepts and theoretical terms, and from which were deduced propositions and bridge principles to indicate the relationship between theoretical entities and empirical phenomena culminating in empirical generalisations (Silva and Rothbart, 1983). As summarised by Silva and Rothbart (1983:3):

The components of a scientific system are a set of statements that are systematically unified within a deductive system and that link theoretical concepts to empirically observable properties through the use of bridge principles.

Science was seen as the outcome of the work of scientists, a product in which emphasis was placed on theoretical validation; the aim was to subsume individual cases under general laws, eventually reducing all theoretical explanation to one encompassing theory. Toulmin (1976:145) has argued, however, that in practice, scientific theories and explanations can be analysed as deductive and axiomatic systems only in special cases and under special conditions.

What Toulmin (1976) terms the 'orthodox approach' to the philosophy of science, which prevailed until the 1960s and persists today, contained three central convictions. Firstly, properly conducted science has a method, canon or organon that is revealed in careful scrutiny of an argument. Secondly, formal algorithms relating empirical observations to theoretical propositions can be developed to express the essential procedures of the scientific method. Thirdly, the rationality of the natural sciences lies in conforming to that set of formally valid procedures. The major concerns thus lay in the internal context of science and in a preoccupation with prediction. Such concerns are still central to the thinking of many nurse theorists and, indeed, some go even beyond prediction to seek prescriptive theory (Meleis, 1985).

Despite the strong appeal of the deductive method since the 18th century, alternative views of the nature of knowledge were never entirely suppressed. Experience, understanding and the purposive nature of human activity constitute a form of knowledge that is fundamentally different from that of nature (Wartofsky, 1976). Within this framework has developed the interpretive, 'verstehen' or hermeneutic approach to understanding which takes account of the meaning man gives to the world he has made. Beginning with the English philosopher, Locke, who held knowledge to be derived from experience, a thread of continuity runs from Vico, Goethe, Dilthey, Durckheim and Weber to Toulmin, MacIntyre, Laudan and Shapiro, from which a framework of interpretive or hermeneutic understanding has developed.

Vico, who is now acknowledged as the father of the historical method, advocated the identification of general characteristics and common features of situations and, in arguing by analogy using the comparative method, laid the groundwork for what is now termed the 'Alternative View' of science. The method has been used to criticise a logic of scientific research concerned solely with problems of formal proof. In place of grand theory, Laudan (1977) talked of

research traditions that persisted over time in a discipline and the use of working theories as a way of viewing phenomena of interest.

Every discipline, it was argued (Laudan, 1977), contains more than one research tradition, a point common to many of the behavioural sciences including psychology and nursing (Overton and Reese, 1970; Silva and Rothbart, 1983). Each research tradition has three components: specific theories; an ontological commitment (e.g., to viewing man as an organic whole or as a machine with component parts); and a methodological commitment. In the interpretive or historicist tradition, science is seen as an ongoing process of human behaviour and thought, directed at solving problems. Questions of truth and falsity are redundant; as the scientific purpose is the resolution of problems, scientific progress is measured in resolved problems.

Toward the goal of increased problem solving and to permit an exploration of different dimensions of the same phenomena, the integration of different research traditions has been proposed (Laudan, 1977). In the natural sciences, the development of molecular biology from virology, x-ray, crystallography and genetics serves to illustrate the point and, in the behavioural sciences, the development of environmental psychology from a variety of sources has already been discussed. Contrary to the reductionist stance held by the logical empiricists, the process of integration: ". . . aims at extracting the progressive components of each tradition in a way that produces solutions to previously unsolved problems" (Silva and Rothbart, 1983:6).

Development of Knowledge in Nursing

Writers like Peplau (1986), as well as Dickoff and James (1986) have stressed that in the early days the development of nursing theory per se was not central to their thinking. There was, however, ". . . an eagerness for conceptual advances" in ". . . an

atmosphere concerned about action possibilities for nursing" (Dickoff and James, 1986:110). Effort was directed to the ways in which nursing as practice could be enhanced. What was sought were ". . . concepts adequate to guide action", to act ". . . as guides in the shaping or producing of reality to desired ends (Dickoff and James, 1986:110). Thus evolved a major concern with the development of a theory for practice (Wald and Leonard, 1964; Donaldson and Crowley, 1978; Diers, 1969).

In their work with nurses, Dickoff and James (1968) presented a four-level 'theory of theories': situation producing; situation relating; factor relating; factor isolating. This outline for theory development is consistent with the logical empiricist mode. Indeed, Dickoff and James explicitly base their interpretation on the work of Hempel and Nagel, using the language of logical empiricism and with a product orientation to science in their insistence on situation-producing theory. Their views have been extremely influential in nursing, particularly in metatheoretical terms (Silva and Rothbart, 1983).

The logical positivist approach has not gone unchallenged by nurses. Writers like Walker (1971), Beckstrand (1978), Stevens (1979) and Carper (1987) have questioned the possibility of deriving situation-producing theory. Metatheoretical formulations like those proposed by Hardy (1974) and Jacox (1974) were developed within the logical positivist mode which was coming under increasingly critical review by philosophers of science in the late 1970s. Moreover, conceptual frameworks published in the early 1970s showed few theoretical underpinnings. In revising their work, nurse theorists like King (1978), Orem (1980) and Roy (1981) tried to bring their work into line with the logical empiricist school of thought. But, as ". . . nursing's theoretical link to philosophy of science was, from the historicist perspective, about a decade behind the times" (Silva and Rothbart, 1983:8), an overly close adherence to the logical empiricist mode may have been detrimental to the development of nursing knowledge.

Although the logical empiricist stance has become increasingly difficult to sustain, Dickoff and James (1986:112) reject:

. . . attempts to limit scientific theory in such a fashion that great expanses of conception beyond the so-called scientific are called for within nursing. But these expanses are relegated to a realm of the untested or the tested but apparently 'non-scientifically'. We purposeful refer to as APE (aesthetic, personal, ethical) the current characterization of those other conceptual realms to emphasize that we see as retrograde motion the reversion to a notion of theory that does not demand strenuous empirical tests for these other conceptions; does not demand a conception of the integration of the various domains through concepts adequate in complexity but still adequate in unification so that they can be concepts to guide action.

In maintaining a strict adherence to the 'Received View of Scientific Knowledge', Dickoff and James seem to reject the possibility of any other forms of scientific knowledge, particularly the use of an alternative approach that takes account of the purposive and reflective nature of human behaviour and thought, and the methodological shift such a perspective would require. Yet, the study of nursing as it is practised is a voyage of discovery that calls for an alternative and richer view of scientific knowledge. Benoliel (1977), Schrock (1981) and Norris (1982) recommend an inductive approach to the study of nursing practice which, they attest, would contribute more to the development of relevant theory than strict adherence to a deductive and reductionist model (Suppe and Jacox, 1985).

One persistent theme in the debate on nursing theory is whether theories of practice or theories for practice should be developed (MacFarlane, 1976). Though there is agreement that theories should serve to guide nursing actions, ways of achieving this goal remain elusive. Whereas some are adamant that only theory and knowledge derived from a uniquely nursing perspective can serve as the basis of

theories for practice (Crawford et al., 1979), other nurse theorists have made a case for what is termed 'borrowed theory' as a source of theory for practice or applied theory (Johnson, 1968, 1974). As Johnson (1968:206) observes:

. . . divisions between the sciences are neither firm nor constant . . . knowledge does not innately 'belong' to any field of science. It is not exactly happenstance that a bit of given knowledge is discovered by one discipline rather than another, but the fact of discovery does not confer the right of ownership.

A distinction is made, however, between basic knowledge, simply borrowed from another discipline, and applied knowledge which, though based on knowledge taken from another discipline, is for the purpose of ". . . defining nursing care and patterning interventions with predictable responses" (Meleis, 1985:102). If knowledge is indeed a common property, then theories derived from other disciplines could be applied to nursing practice, provided these are derived, integrated and synthesised with a nursing perspective (Donaldson and Crowley, 1978; Stevens, 1979; Schrock, 1981). When one uses borrowed concepts and theories, one must redefine and synthesise them according to the perspective of the borrowing discipline (Crawford et al., 1979).

Images of Nursing

During the 1950s and 1960s the need to develop nursing knowledge that would act as a guide for action led to a search for practice theory (Dickoff and James, 1986), but lack of agreement on a definition of nursing led to this search being abandoned in favour of the development of conceptual models organised around domain concepts of person, environment and health (Fawcett, 1984; Meleis, 1985; Peiper, 1985). In developing these conceptual models three images of nursing have been presented through the work of nursing writers and theorists (Meleis, 1985).

In the first image, nursing is explained through a focus on what nurses do. In answering this question the 'needs-theorists' relied heavily on psychological theory, particularly on Maslow's (1954) hierarchy of needs. Man was seen to have a hierarchy of needs; when lower order needs had been met, more complex and mature needs could emerge. In this perspective the role of the nurse lay in fulfilling these needs through nursing actions. Best known among the writers of the period are Henderson (1966), Abdellah (1969) and Orem (1971) from North America, and subsequently Roper et al. (1980) in the United Kingdom.

Nursing has evolved in the light of thinking from other disciplines and during the 1960s a simple germ theory of disease was giving way to a multifactorial theory of disease causation which combined psychological as well as somatic factors. In nursing, the emphasis changed to addressing the psychological as well as the physiological needs of patients and Lydia Hall introduced the concept of the biopsychosocial being in need of total care (Leonard, 1985). In its second phase of development, the question of how nursing was carried out was addressed and the concept of the process of nursing was introduced by Orlando (1961). Fundamental concepts were drawn from existential philosophy, the symbolic interactionist perspective in sociology and from developmental theory (Meleis, 1985). Major theorists of the period include Peplau (1952), Orlando (1961), Weidenbach (1964), King (1971) and Travelbee (1971). The legacy from what has been termed the 'interactionist school' included the affirmation that: ". . . nursing is a deliberate, interpersonal process encompassing help and assistance within a humanistic framework for the purpose of developing a positive relationship". (Meleis, 1985:175).

The uniqueness and dignity of the individual receiving nursing care was stressed and the need for systematic knowledge was emphasised. Help, which was to be tailored to the needs of the individual patient, could arise from physical, physiological or

psychological limitations, from temporary or permanent disability or from restrictions in the environment (Meleis, 1985).

The third and still evolving image in nursing sought to explain the purpose of nursing in terms of the restoration of balance and harmony and the maintenance of stability between the client (rather than the patient) of nursing and his or her environment, emphasising health and wholeness. Concepts were drawn from theories of adaptation and development and from general systems theory. The main proponents of this perspective are: Johnson (1968); Rogers (1970, 1980); Roy (1971, 1981); Newman (1979); Neuman (1980); Parse (1981) and Fitzpatrick (1983).

For Rogers, a key thinker of the group, person and environment are seen as co-extensive; change in one is inseparable from, and simultaneous with, change in the other (Rogers, 1970). Nursing actions or interventions should operate at the interface between person and environment by simultaneously promoting change in the environment, the life processes of the individual and in the rhythmic pattern (Rogers, 1970).

While it is undeniable that person and environment are co-extensive, the difficulty of applying Roger's (1970) and Parse's (1981) ideas in practice are daunting. These are theories operating at a very high level of abstraction and difficult to operationalise. In using the notion of energy fields to characterise person and environment, Rogers may have 'stretched' the concept of person and environment beyond the limits of everyday comprehension, reflecting an interest in problems of theorising rather than problems of practice.

In the perspectives developed by nurse theorists, nursing is seen as a form of intentional action, either to maintain stability or to promote change. Since the 1950s, views have shifted from those actions being directed to meeting patients' needs to promoting a positive relationship through nurse-patient interaction and, finally,

to managing the interaction between person and environment:

. . . the process of nursing requires that the nurse interacts or mediates within a health-illness situation with an individual who is an integral part of his or her environment or sociocultural context, and who is in transition from one state to another. (Meleis, 1985:185)

Transitions denote a change in health status, role relationships, expectations or abilities. New knowledge may be needed, or new patterns of behaviour may require to be developed to meet the demands of a new situation (Meleis, 1985). It is how nurses can help persons to cope with these transitions that are central to the practice of nursing. To understand this process, the concepts of person and environment as shown in the nursing literature are briefly summarised.

The Concept of Environment

In general, nurse theorists have adopted one of three approaches in discussing the environment. The first is derived from a functionalist approach which views the environment as bounded and situation-specific, like hospital, home or clinic (Orlando, 1961; Levine, 1969, 1973). The view of environment held by Orlando (1961) and Levine (1969) is similar to the perspective adopted by Stokols (1978) and Newcomer and Bexton (1978) who were adamant that environment had to be treated as separate from person for the purpose of analysis. Among the advantages of such a perspective is the ability to use not only the attributes of environments, again for the purpose of analysis, but also to examine different time-frames such as the points of entry to, and discharge from, a particular situation.

Levine (1969, 1973) is the nurse theorist who has addressed and made explicit her view of the environment, though she has been criticised for a focus on the illness end of a health-illness continuum (Leonard, 1985). To Levine, each individual has an

internal and an external environment. The internal environment is, of course, biological, but the external environment includes perceptual aspects which respond to the sense organs; operational factors like radioactivity or viruses that cannot be perceived yet which elicit a response within the internal environment, and conceptual factors such as culture, language and the value system that affect human behaviour (Peiper, 1985). Illness is manifest in a change in behaviour or level of functioning as a response to stress or fear, or as an inflammatory or sensory response. Nursing actions or interventions are based on four principles: (i) the conservation of energy, for example, the balance between nutritional intake and energy output; (ii) the conservation of structural integrity, as in wound healing; (iii) the conservation of personal integrity through the involvement of the patient in the decision-making process; and (iv) the conservation of social integrity through the maintenance of the social network. Levine's concept of the environment moves from the intracellular and intrapersonal dimension to consider aspects of person in the social and cultural context, and contains the components of the transactional model described by Stokols (1978).

At the other extreme, Rogers (1970, 1980) uses the notion of constant and perpetual change through the interaction between person and environment, exchanging energy and matter with each other in an open system (Falco and Lobo, 1985). Central to Rogers's thesis is the notion of energy fields that have no boundaries, are indivisible and extend to infinity. Environment was described by Rogers (1970: 341) as: ". . . a four dimensional negentropic field, identified by pattern and integrated with the human field, and encompassing all that is outside the human field". This view of environment is closer to the view held by Ittelson (1974) who argues that neither man nor environment is ever encountered or can be defined apart from the other.

While there is agreement among nursing theorists that the person-environment interaction is continuous, whether person should be subsumed in environment is less clear. For purposes of analysis, at

least, it is useful to distinguish person and environment. In nursing, as in other social and behavioural sciences, constructs to bridge two frames of reference have been elusive, particularly when these frames of reference are biological and social. Such concepts are urgently required.

The Concept of Person

Two world views or cosmologies constitute the metaphysical basis from which all explanations, explicitly or implicitly, are derived (Overton and Reese, 1970). In the Platonic tradition, soul and body are viewed as two separate entities (MacIntyre, 1984). From this viewpoint is derived the atomistic-biological perspective in which man is seen as a complex biological organism (Nordenfelt, 1986); the metaphor of the machine is used to describe an organism characteristically at rest and active only in response to external forces. In this model, antecedent causes are followed by consequent effects and prediction is possible. The whole is the sum of its parts and, in theories employing this model, behavioural change is a response to external events. In other words, environment causes change in the classic stimulus-response manner (Russell and Ward, 1983). This model has been influential in medicine and in some traditions of psychology; behaviourism, for instance. Nurse theorists who have used this perspective include Johnson (1974), Neuman (1974) and Roy (1981).

In the opposing, Aristotelian tradition, the soul gives form to the body's matter (MacIntyre, 1984). In the holistic-humanistic view, the living organism is seen as an organised whole, a social agent, presupposed by its parts and in continuous transition from one state to another. The person is the source of purposeful action and, strictly speaking, prediction is not possible (Mishler, 1979; Overton and Reese, 1980). In a humanist mode a person's activities comprise intention to act as well as action. To comprehend the actions of another therefore requires a consideration not only of

intention, but also of meaning and interpretation (Menzel, 1978). In a holistic framework, behaviour is assessed and can be understood only in terms of the context in which it is embedded, and can be seen as organised patterns and frames of meaning in which the environment may inhibit or facilitate change. Research traditions, both in nursing and in environmental psychology, have employed this frame of reference and nurse theorists using this tradition include King (1968), Rogers (1970), Levine (1971), Paterson and Zderad (1976), Parse (1981) and Fitzpatrick (1983).

A person has been described in the nursing literature as a physical, social, intellectual, emotional and spiritual being (Nightingale, 1859), as a behaving human organism (Orlando, 1961), as a behavioural system (Johnson, 1968) and as unitary man (Rogers, 1970, 1980):

. . . a four-dimensional negentropic field, identified by pattern and organisation and manifesting characteristics and behaviour that are different from the parts and which cannot be predicted from knowledge of the parts.

(Rogers, 1980:332)

Summary

The relationship between person and environment has begun to be clarified only recently by nurse theorists, though Nightingale (1859) was clear: nurses could act only to create the conditions that were the most reparative for the patient through reduction of the noxious influences from environmental sources. Orlando (1961), Roy (1971, 1981), King (1971, 1981), and Levine (1971) adopted an interactionist perspective. For Levine (1971) that interaction was directed at the conservation of energy in four modes; for Orlando (1961) the 'dynamic nurse-patient relationship' was stated rather than made explicit. The concept of adaptation was central and unifying in Roy's (1981) thinking. Interest has shifted to a perspective that can accommodate change only since Rogers (1970) has made explicit her

'Theoretical Basis of Nursing' with its central concept of unitary man.

Rogers' theory has been criticised for an inherent difficulty in descending the ladder of abstraction to operationalise the concepts; certainly some form of what Merton (1957) terms middle-range theory appears justified. Such a middle-range theory may be found in the notion of lifespan development. Like Rogers, psychologists with an interest in lifespan development have rejected the artificial dichotomy between person and environment, emphasising ways in which interaction effects change through a process of dialectic:

. . . [in nursing] the contextual-dialectic framework implies that nursing interventions with a broad contextual focus can facilitate adults' well-being during conflict producing events including disease, life-crises, ageing, disability and dying . . . [This requires] an understanding of how individuals (including nurses) integrate the lack of synchrony that occurs between people and the physical, social environment. (Reed, 1983:20)

The Theory-Practice Gap

Several writers (Donaldson and Crowley, 1978; Stevens, 1979; Schrock, 1981; Clarke, 1986; Visintainer, 1986) have asserted that nursing theory should arise from nursing practice. Because:

. . . many theories are idealised perfections, impossible to apply in imperfect reality . . . when one reads nursing theory it is often a beautiful fantasy patently unrelated to the messy, real world of nursing practice . . . many theories are so all-purpose, so all-inclusive and abstracted that in trying to explain everything they explain nothing.

(Miller, 1985:420)

a gap exists between theory and practice that has proved difficult to bridge. A purely inductive approach is, however, difficult to sustain. As Visintainer (1986) has pointed out, the kind of knowledge needed for the delivery of care is situation-dependent:

. . . [and] theories developed in the certainty of a laboratory or academic circle may need adjustment when applied to the more rigorous and ambiguous demands of practice . . . theory cannot direct practice, but can direct the exploration and manipulation of its domain.

(Visintainer (1986:35)

The assumption that the axiomatic-deductive argument can lead directly from theory to practice is flawed. Rather than simply applying theories supplied by the pure scientist, the practitioner (engineer, technologist, nurse) is constantly faced with problems to be solved and many problems are only partly solved by reference to understanding a causal mechanism which rarely offers a rationale for action. Particularly when dealing with the interface between the biological and the social system, the nature of the problem can shift (Brandtstadter, 1978; Visintainer, 1986).

There is agreement that a difference exists between general scientific knowledge and its particular clinical application. Understanding, to a biomedical scientist, is based on intellectual ability and theoretical knowledge; operating from general principles, his evidence is specific and articulate. A clinician's understanding of a particular case is based on biological signs and symptoms plus psychological and personal factors. His or her knowledge is particular, time-bound and tentative and, as responses to cues from the environment, his evidence will be more or less articulate and linked to personal experience (Toulmin, 1976). The difference between medical science and clinical medicine lies in the context of enquiry. The context of clinical medicine, like clinical nursing, as well as pragmatic goals, has a distinctive subject matter of great complexity, man. Unlike ice-cubes and molecules that show little diversity, and whose behaviour can be explained simply by citing the relevant mechanism, the complexity of man places him in a class of particulars, occupying time and space, that cannot be understood solely in terms of physical and mechanical forces (Gorovicz and McIntyre, 1976).

Carper (1978) identifies four fundamental patterns of knowing in nursing: personal; ethical; empirical; and aesthetic. Although not sufficient alone, each component pattern of knowing is a necessary component of a gestalt of nursing practice. Personal knowledge is the basis of those symbolic, interactional and transactional processes in the nurse-patient relationship, and as a fundamental pattern of knowing is the most difficult to comprehend as it requires the sacrifice of form in order to tolerate ambiguity and uncertainty. Yet personal knowledge cannot be separated from ethical knowledge, outlining the values underpinning nursing actions that are based on, or derived from, factual, empirical knowledge. The final form of knowing described by Carper (1978:18) is the aesthetic pattern of knowing in which similarities among cases rather than the properties of cases are sought. The aesthetic pattern of knowing involves: ". . . the perception of abstracted particulars as distinguished from the recognition of abstracted universals. It is the knowing of an unique particular rather than an exemplary class . . ." that is the basis of judgement in nursing practice, and from which nursing actions flow.

The combination of the complex nature of man plus the purposive and intentional nature of clinical medicine and nursing makes it impossible to use axiomatic-deductive explanations in the logical positivist manner. Caplan (1986) advocated the use of critical cases and reasoning by analogy. The uniqueness of the subject matter, and the need to consider the context of enquiry, indicates the need for a careful consideration of the ontological and methodological commitment in the research process (Laudan, 1977). A holistic view of man suggests the appropriateness of the case study approach, and the need to consider the context of enquiry indicates that enquiries should take place in a multiplicity of settings (Mishler, 1979).

Nursing theories developed in the 1960s and early 1970s did not adequately reflect changes taking place in the philosophy of science and, as a consequence, many of the available theories reflect a view

of science that is both rigid and narrow with more emphasis on precision and quantification (Webster and Jacox, 1986). Situations of practice were treated in the logical empiricist model as the lowest level in a hierarchy descending from theory through applied science to application in practice (Schon, 1983). The mode of reasoning was one of technical rationality in which problems were identified and addressed in terms of ends and goals.

One of the goals of nurse theorists in the 1960s and 1970s, the development of a predictive theory for practice, now seems problematic in the light of a paradigmatic shift that views science not as a product but as a process of problem solving, using families of closely related conglomerate (Gorovicz and MacIntyre, 1976) or reticulate and overlapping theories (Toulmin, 1976; Webster and Jacox, 1986). What is distinctive about nursing knowledge is not its mode of inquiry but its subject - the interactions and inter-relationships between person and environment in the context of health and illness. The kind of knowledge needed to guide practice is to be found not on the 'high ground' of rigour and universal abstractions but in the relevant and 'messy swamp' of shifting and ambiguous ends characteristic of a practice discipline. Like medical knowledge, nursing knowledge is not the product of a unified science but is a cultural and historical emergent from particular knowledge (Wartofsky, 1976) which forms a broad spectrum of knowledge rather than a hierarchy. This spectrum of knowledge is punctuated by boundaries and distinct ways of 'coming to know' that is particular, time-bound and context-specific (Toulmin, 1976). In general knowledge the assumption holds that 'all things are equal', an assumption that is untenable in situations of particular knowledge since natural settings, like humans, are reactive (Mishler, 1959).

Summary

One of the stated aims of nursing, to help patients overcome obstacles to self-care through the management of the person-environment interaction, can be linked to models developed within a

behavioural perspective. However, studies conducted within the parameters of a research project have proved difficult to replicate in the 'messy swamp' of clinical practice (MacIntyre and Gorovicz, 1976; Visintainer, 1986)

Running through the studies reviewed here is the common denominator of UI in elderly people, and several important issues have emerged. For example, how useful are interventions labelled 'habit training' in the nursing journals of the United Kingdom? In the absence of described 'reinforcements' can this approach be contained within the rubric of behavioural therapy? In a dementing illness it cannot be assumed that the neuropsychological capacity needed to perform certain tasks remains intact: indeed, available evidence suggests that such abilities are progressively lost. Apraxia and agnosia have been noted in severe, advanced dementia (Mahendra, 1987). Urinary incontinence, as Eisdorfer and Cohen (1981) have reminded us, is a multi-faceted problem, and effective treatment will require consideration of many factors.

Most usually lack of success has been attributed to a weakness in the research design, to bureaucratic factors, staff changes or low staff:patient ratios. Few investigators seem to have questioned the adequacy of a model of operant conditioning and its underlying assumptions, and, most importantly, the extent of the theory-practice gap. As Chanfreau-Rona et al. (1986) observe, it is an open question whether a predominantly hypothetico-deductive approach with its demands of random sampling to meet the requirements of statistical generalisation can be realised in the clinical situation where even an approximation of laboratory-style control over variables is absent. Given the gradual decline that accompanies a dementing illness, any permanent change in behaviour is unlikely to be achieved, and if this is not the aim, the most fruitful approach may be developed from the work of Schelle et al. (1983, 1990) and Creeson et al. (1989), who mediated the person-environment interaction by prompting voiding behaviour.

McFarlane (1976), Schrock (1981) and Clarke (1986) in the United Kingdom, along with some American nurses (Stevens, 1979; Flaskerud and Halloran, 1980) have emphasised the importance of the concept of nursing as action or activity. There is agreement that nurses manage the interaction between person and environment to promote well-being, "Nursing activity consists of constantly and immediately regulating, promoting, modifying, maintaining and monitoring the interaction between the patient and the environment ..." (Flaskerud and Halloran, 1980:4).

Prompted voiding appears to be a promising approach that fits into this perspective as it is based on an intervention to provide environmental cues for appropriate toileting behaviour. The studies by Schelle et al. (1983, 1990) showed the interventions to be sustained only under strong supervisory pressure under the conditions of usual practice, or when conducted by staff specially recruited for the research project. Creeson's (1989) study is of particular interest because an attempt was made to introduce the intervention into usual nursing practice but it is not clear whether the intervention persisted and under what conditions. More needs to be known of the ways in which nurses manage the interaction between the person and environment and this particular nursing action as a 'persistent theme' identified as an 'essential core of nursing' in the patterning of human behaviour in interaction with the environment (Donaldson and Crowley, 1978:113).

There is evidence of a commitment to a conceptualisation of nursing as a 'relational profession', according to Tinkle and Beaton (1983), with a growing commitment to 'paradigm II science'. Among its values, nursing includes an appreciation of the social context of care that is incongruous with the research methods of paradigm I or positivist science. Tinkle and Beaton (1983:36) call for a convergence, a:

... science that retains an objectivity associated with paradigm I science whilst ensuring that the research it produces has validity in the real world and the influence of contextual variables is made explicit ... an emphasis on contextual variables would force a closer examination not only of those theories that nursing utilises to explain what happens in practice settings, but of the practices and their settings as well.

SUMMARY OF THE THEORETICAL FRAMEWORK

The nature of the gap between theory and practice was addressed and it was concluded that the kind of knowledge needed to guide practice could not arise from deductive reasoning applied as technical rationality. It was argued that conventional models derived from behavioural psychology were inadequate to understand complex behaviour like UI related to regression associated with a dementing illness. Behaviour is a product of person-environment interaction, and the importance of understanding of the context of behaviour was stressed. The use of a model to examine person-environment interaction provided an outline of internal and external dimensions of behaviour, but was still unable to accommodate the notion of interaction. A contextual-dialectic framework of person, environment and person-environment was proposed to examine events as these occur, and it was argued that this framework was commensurate with evolving thinking in nursing. A representation of this conceptual framework is given in Figure 8. Finally, the nature of the gap between theory and practice was addressed, and it was concluded that the kind of knowledge needed to guide practice could not arise from deductive reasoning applied as technical rationality. To change the ways in which nurses manage UI in confused, elderly patients, it is not enough to study their behaviour nor the pattern of their movements, it is necessary to understand: "... their actions, the ways people do things as understood by the someone involved in some manner in the action" (Shotter, 1976:38).

The high levels of UI identified in long-term care wards are, at least partly, dependent upon the characteristics of the patients. But it may be that these high levels occur in the presence of a task-oriented and routine model of care. In studies by nurse researchers in the 1960s and 1970s, attention was drawn not only to the limitations of the environment of long-term care and the constraints to good nursing practice imposed by the physical and spatial environment (Norton et al., 1962; Reid, 1975), but also to ways of organising and delivering care that was task-oriented, routine and not centred on the identified needs of patients (Baker, 1978; Miller, 1978; Wells, 1980). In short, these researchers identified

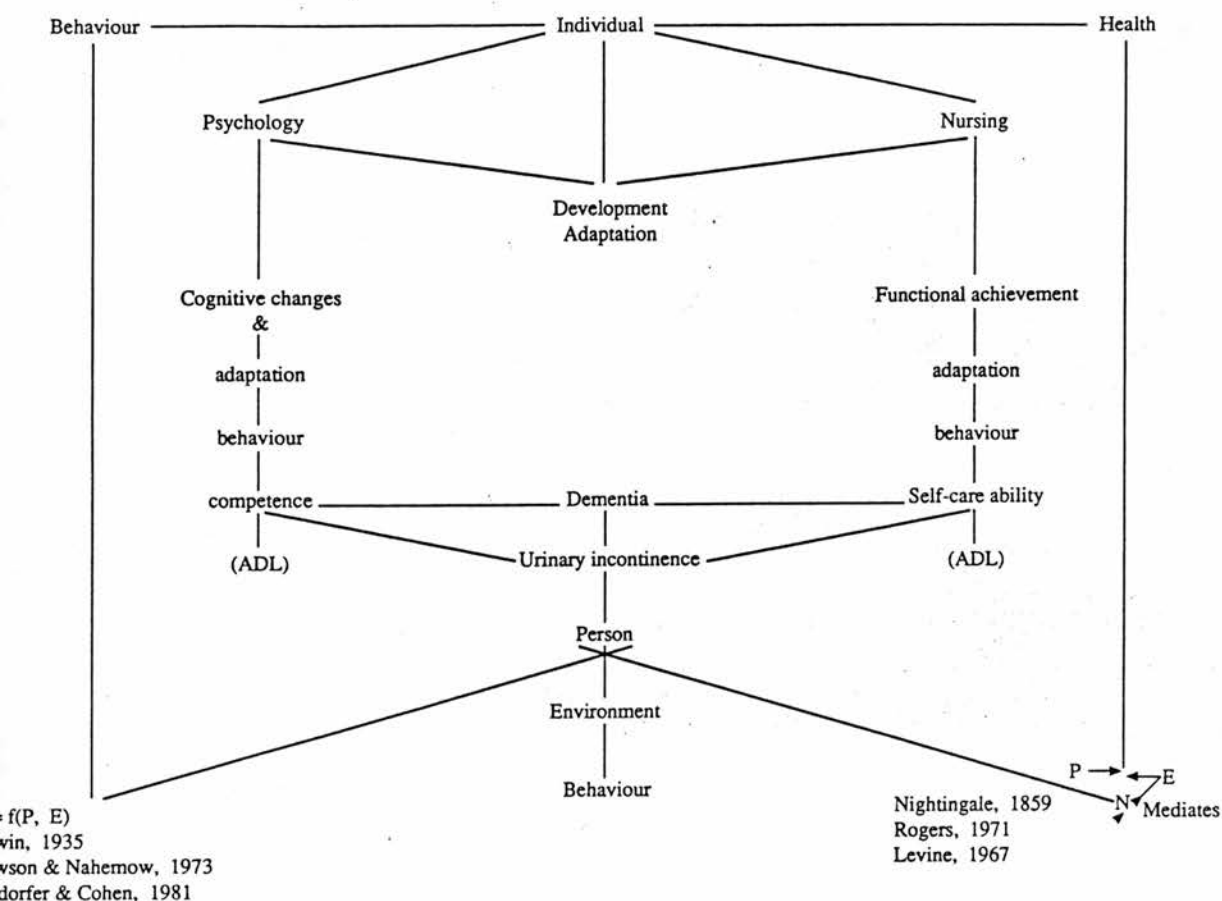


FIGURE 8: Representation of conceptual framework of the study

deficits in what could be termed the environment of care. Given that human beings are in continuous interaction with the environment (Kleemeier, 1965; Rogers, 1970, 1981; Lawton, 1983), ways in which the environment can be made conducive to health and well-being are identified concerns of nursing (Donaldson and Crowley, 1978; Flaskerud and Halloran, 1980). In terms of the environmental docility hypothesis advanced by Lawton (1975, 1981) which states that: "... as individual competence decreases, the environment assumes increasing importance in determining well-being in the elderly", it follows that:

as the environment assumes increasing importance in determining the well-being of elderly persons, ways in which the environment can be made conducive to well-being will be of increasing importance in the practice of nursing.

This statement forms the basis of this study which can be stated in the following propositions:

PROPOSITION 1:

Nursing care of the elderly without regard to the interaction between person and environment will perpetuate a system of care based on routine tasks.

PROPOSITION 2:

Where 1 prevails, nurses' perception of appropriate care will take the form of a routine geriatric model.

PROPOSITION 3:

Under the conditions of a routine geriatric model, unscheduled demands for toileting are unlikely to be met.

PROPOSITION 4:

When 2 and 3 prevail, the level of incontinence is likely to be high.

PROPOSITION 5:

When professionally qualified nurses actively manage the interaction between person and environment, this will take the form of an intervention model.

PROPOSITION 6:

Under the conditions of an intervention model:

- a) nursing care will take the form of a structured intervention;
- b) such structured nursing interventions will mediate the interaction between person and environment;
- c) such interventions will be planned, recorded, communicated and evaluated.

PROPOSITION 7:

When 6 a), 6 b) and 6 c) prevail, the level of UI will be low.

CHAPTER THREE

STUDY DESIGN AND METHODS

To have mastered "theory" and "method" is to have become a conscious thinker, a man at work and aware of the assumptions and implications of what he is about. To be mastered by "method" or "theory" is simply to be kept from working.

(C. Wright Mills, The Sociological Imagination, 1970:27)

STUDY DESIGN

There is agreement among several philosophers that science is rooted in common sense (Toulmin, 1972; Wartofsky, 1976), and that it is the proper business of science to be critical of common sense and to refine it through reflected knowledge in order to arrive at reflected knowledge (Reese and Overton, 1980). There is, however, a danger that the reflected knowledge may not return to be absorbed into common sense knowledge. In a perspective that rejects the downward linear flow from theory to practice as well as the inductive leap from practice to theory, a viewpoint of reciprocal interaction between theory and practice is derived from principles enunciated by Hegel (1964) as a dialectical conflict between the mind and the senses. Through struggle and interaction between these two components which cannot be reduced to a unidirectional linear influence, new levels of understanding are reached. Thus critical social science can encompass the received view as well as the interpretive view of understanding, and is enabled to criticise what-is from a viewpoint of what-might-be. This normative stance is justified and based on an internal and constructive criticism of the practices of the community to which it is addressed (Argyris et al., 1984).

The overall purpose of the study was to explore the complex relationship among the social and physical environment, patient characteristics and the organisation and delivery of nursing care to gain a better understanding of how nurses manage UI in confused, elderly patients. An additional purpose was to develop interventions that nurses themselves could agree to implement. The study was designed, therefore, as a series of case studies with an action-research, single case experimental component embedded in the two main case studies. These studies were conducted between 1983 and 1986 in two psychiatric hospitals in one Scottish Health Board, and in two voluntary residential homes for the elderly, one of which

specialised in the care of the confused elderly, in a different Health Board area.

Preliminary case studies or pilot enquiries (Yin, 1984), which were carried out prior to the final articulation of specific methods and instruments in two psychogeriatric wards and in one of the voluntary homes, enhanced the study through insights that contributed to the development of the research instruments and methods employed in the two main studies. When the study was designed initially, textbooks describing the case study as a research method were little known and used. Though references were made in standard textbooks on nursing research (Fox, 1982), not until the publication of a small volume by Yin (1984) was a beginning made to a fuller description of case study research methods and designs.

Initially the research strategy was derived from the work of behavioural and ecological psychologists (Barker, 1968; Willems, 1974; Rebok and Hoyer, 1977). In this perspective, the observational procedures of the ecological perspective are combined with the experimental procedures of behaviour analysis in which questions about the behaviour of interest and its context are formulated by the investigator in particular ways (Willems, 1974). Rather than a research design in the usual sense, in this orientation to contextually-rich, low-level analysis, the interdependent relationships between an individual, his or her behaviour and the environment are analysed, predominantly through unobtrusive and naturalistic methods of research using minimal controls. In this multi-faceted, ecological perspective, pluralism or triangulation of methods and procedures is required to give integration and depth. To facilitate integration, Willems (1974) proposed a three-stage strategy of (i) procedural cross seeding; (ii) ecologically-orientated experimentation; and (iii) the pursuit of ecologically-based hypotheses through convergence.

Procedural Cross-seeding is the term used to describe an I-wonder-what-would-happen-if-I-changed-the-conditions? approach,

where conditions are measures, subjects, background variables or locations (Willems, 1974). Ecologically oriented experimentation is explained by Rebok and Hoyer (1977) as combining a consideration of the whole person with the context of behaviour to elaborate the interdependencies between the individual, the behaviour of interest and the setting. Single case experimental studies were advocated. The Pursuit of Ecologically-based Hypotheses through Convergence is a means of confirming an observational 'hunch' by creating a situation where more structured observations can be conducted. Together these three strategies provided a means for an in-depth exploration of a complex situation and were incorporated into the case study method in which an action-research component was used to develop and test single case experimental studies of nursing interventions aimed at: (i) improving the legibility of the environment through sign-posting, and (ii) exploring the use of prompted voiding by nursing staff.

Case Studies

In long-term care settings questions of sample size and selection procedures are often difficult as individuals able to meet certain criteria can be difficult to identify. Instead of the random sampling technique, researchers commonly use one of two options: (1) to employ the whole of an inadequate and possibly unrepresentative convenience sample from one setting, or (2) to conduct a study across several settings where there is a risk of confounding the effects of the setting with either the treatment or the subjects (Robb et al., 1986). An alternative lies in a single subject research which includes the study of selected observations as these occur (the case study), or of controlled interventions or experiments imposed on natural events (Holm, 1983). Single case studies thus permit the documentation of individual responses in such a way that differences between individuals as well as their similarities can be identified. Single subject research has been employed widely in behavioural therapy where a focus on the individual has served to unite practice

and research. As a method it has great potential in nursing where there is less emphasis on the discovery of functional relationships.

Sometimes seen as controversial, case studies have been advocated to sustain a tradition of research in nursing compatible with a holistic view of Man (Silva and Rothbart, 1984; Meier and Pugh, 1986), particularly if the focus is upon contemporary, ongoing events and situations where the outcome is uncertain. A major strength of the case study is its ability to deal with phenomenon and context.

As recommended by Yin (1984), to improve construct validity, the use of multiple sources of evidence were used, and to improve external validity, multiple case studies were conducted. A case study has been described (Yin, 1984:23) as an empirical enquiry that:

- investigates a contemporary phenomenon within a real life context;
- when the boundaries between phenomenon and context are not clearly evident; and in which
- multiple sources of evidence are used.

Action Research

Action research has become increasingly popular in the practice professions like teaching and nursing as an approach by which problems identified in a local situation are analysed and programmes of action devised, implemented and evaluated (Fox, 1982). Described as a strategy embodying reflective practice and designed to bridge the theory-practice gap, action research or action science as it is termed by Argyris et al. (1984), is defined by Ebbutt (1985:156) as: ". . . the systematic study of attempts to change and improve practice by groups of participants by means of their own actions and by means of their own reflections upon the effects of their actions".

Critical of the limitations of both positivist and interpretive modes of research, action research is based on the belief that

research carried out by a researcher in isolation is virtually meaningless to practitioners who have not shared in the underlying thinking. In critical action research, those practitioners who are a part of a study, are involved in its planning so that the findings may be used as a communal resource and as a catalyst for change (Webb, 1989). Action research differs from conventional research in the dissolution of the polarity between researcher and researched.

Through an emphasis on reciprocity through participation and collaboration, an increased understanding by the researcher and the researched of the nature of the problem is reached and change is facilitated. This relationship between greater understanding and change, described by Schon (1983) as 'reflection-in-action' was based on the simple premise that, to change practice, it is necessary to understand action from the viewpoint of the actor (Shotter, 1978). The task of the researcher in action research is, therefore, to identify the tacit knowledge that informs practice and, in collaboration with the practitioners through processes of 'reflection-in-action', to 'reframe the problem' (Argyris et al., 1984).

To be able to reframe the problem, the researcher must be able to share and comprehend the informal theory that underlies practice as well as possess the situated knowledge needed for change. In reflective research, as outlined by Schon (1983), the ways in which reality is constructed and framed in a problematic situation are considered and, drawing and reflecting on a repertoire of skills, the problem setting is reframed. Problem setting is the process by which critical features of a situation or problem are identified and the context within which they will be resolved is reframed. What Schon (1983) proposed bears a striking resemblance to the arguments of the environmental and behavioural psychologists (Wicker, 1976; Willems, 1977), drawing on an interpretive tradition of research, yet going beyond understanding and interpretation to application. Coming from different directions, both acknowledge insights from Dewey (1933) and Lewin (1935).

Single Case Experimental Studies

As a strategy, single case experimental studies are consistent with action research as well as with the process of nursing. Emphasis is placed on clinical replication as a framework to incorporate findings from different settings, and attention is directed to clinically rather than statistically defined successes and failures in individual patients or clients who have received a specified intervention. An important aspect of clinical replication is a procedure termed "intensive local observation" (Cronbach, 1975: 125), which is a systematic study of different situations, locations or conditions.

A representation of the study design is given in the following figure.

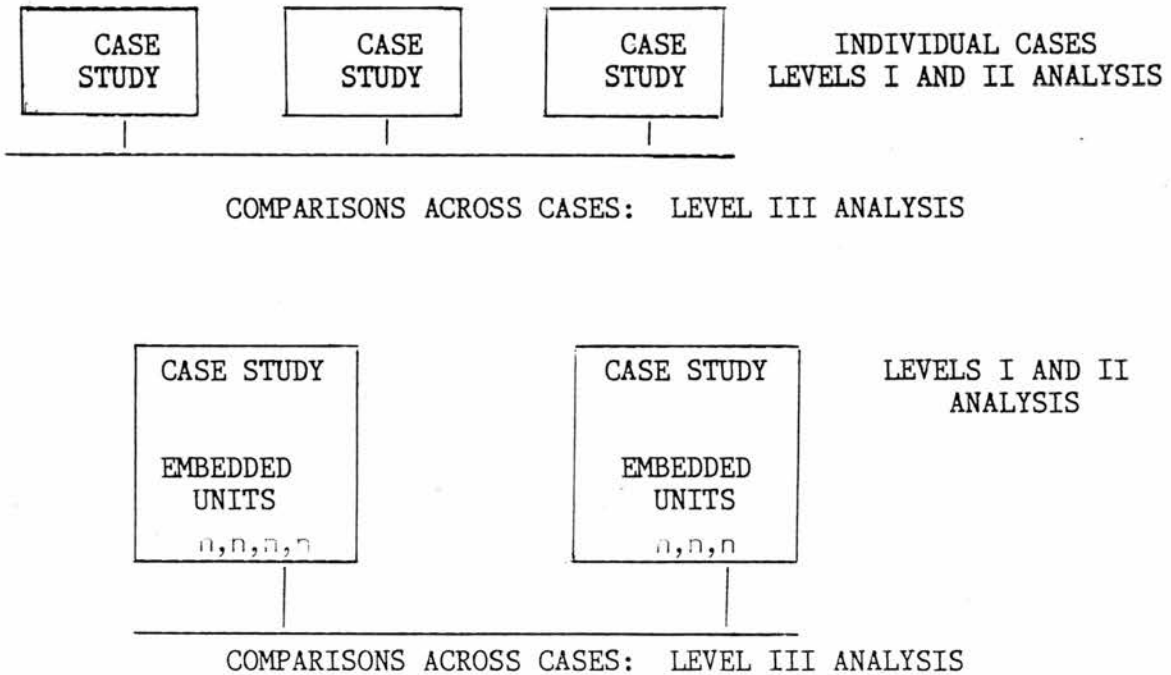


Figure 9: Representation of study design

STUDY METHODS

To provide the required depth of analysis, the research methods were triangulated as recommended by Denzin (1978). In the preliminary studies, observations were combined with informal interviews; a survey of the prevalence of UI was carried out in the National Health Service wards and in one of the voluntary homes. In the main case studies, single case experimental studies were also incorporated, giving embedded case studies (Yin, 1984).

Observations

In an early entry to the field to assess the use of observational strategies, it became obvious that the physical design of many wards precluded any kind of unobtrusive observations: any observer would have to be located within the ward space.

Preliminary studies carried out prior to the final articulation of the study's theoretical perspective provided protocols for the collection of data in the main studies. Insights and findings from these preliminary studies, in combination with further development of the theoretical perspective, were used to reframe the problem and to develop and test nursing interventions. Additionally, an opportunity was afforded to examine the logistics of field studies, personal demeanour, ways of recording data, and the development of reciprocity, participation and genuine collaboration with colleagues from practice was created. For the researcher, an element of control was willingly sacrificed in the interest of greater authenticity.

As the primary area of interest was the interaction between person and environment and the ways in which nurses acted to mediate that interaction in relating to toileting practice in general and episodes of UI in particular, a major focus of observation was the form and outcome of these interactions. Observations were made also

of the particular attributes of physical environments as suggested by Windley and Scheidt (1980) and of the effects of changes in these attributes on interactions between person and environment.

Questioning

The second aspect of triangulation concerned informal questioning of the nursing and care staff to uncover opinions, views and the tacit knowledge that informed practice. A guide for the benefit of the researcher and to maintain consistency was derived from the literature (Overton et al. 1976; Cherniss, 1980).

As the study was concerned with participatory research with a collaborative commitment, the process of informal questioning was reciprocal: on the one hand it allowed the researcher to identify the rationale and tacit knowledge underpinning actions, and to examine the conflicts and contradictions inherent in the ways in which work was organised. On the other hand, the researcher was used by the participants as a resource person, sharing information and knowledge.

Survey of Urinary Incontinence

A third aspect of the triangulation consisted of a survey of the prevalence of UI in those National Health Service wards and residential homes that agreed to participate in the study. In early entries to the field, it became obvious that it would be impossible to 'observe' episodes of UI without intervening and creating some kind of researcher effect. Too frequent checks would obscure natural interactions and, even if desirable, the task was beyond the capacity of a single investigator if more than a few persons were to be observed. In addition, as the wards were busy and not overstaffed, any additional requests for recording information would impose a burden upon nursing and care staff.

In the preliminary studies a very simple recording form was devised and staff were asked to record any episodes of UI identified during routine (usually two-hourly) toileting rounds. These observations were made only by day staff.

Single Case Experimental Studies

Single case experimental studies were conducted in relation to four residents in the residential home and on four patients in the psychogeriatric ward. These incorporated interventions based on the identified tacit knowledge as well as on principles of behavioural psychology.

Based simply on measures taken as consistently as possible, as often as possible, and as long as possible to estimate the extent of change over time, these studies of a single case sought to measure change within the individual rather than between groups. Measures of this kind are particularly suited to the elderly who can exhibit variations in responses due to treatment or even such extraneous factors like fatigue. Their simplicity makes them suitable for the use of practitioners as they permit the development of criteria to denote clinical rather than statistical change by the examination of patterns and trends over time. Such methods are particularly suited to adaptation within the nursing process to evaluate nursing interventions.

Each individual case is considered as a single unit of analysis embedded within the larger case and is discussed separately before comparisons across cases are made. Each single case was designed as an A/B/A experiment in which, in phase I, (A) the phenomenon of interest is determined. (As there were relatively few episodes of UI per individual/day (from 1-4), to establish whether there was any variation in trends that could be attributed to a treatment effect, raw data were collated on a weekly basis.)

In the second phase (B), the intervention is applied and the measurements are continued. Following withdrawal of the intervention and a reversal to the baseline conditions (A), measurement is continued to see whether any changes persist. The interventions employed in the study were:

- 1) a programme of ward orientation using signposting as recommended in a report to the DHSS (1981, and
- 2) prompted voiding as suggested by Schnell et al. (1984) and Creeson et al. (1989).

Sign-posting

In an investigation into colour and sign recognition in elderly severely mentally infirm (ESMI) patients (DHSS, 1981), black was the colour found to be recognised most readily, followed by red/yellow. In relation to signs, however, pictographs, now commonly used in public places, were found to be confusing to ESMI patients, and the word TOILET was most quickly recognised, causing the least confusion. Accordingly, signs with the word TOILET in three-inch black letters on a red ground were made with an arrow pointing in the correct direction. These signs were fixed along a route to the toilet, and also to door jambs to allow recognition while walking along a corridor. Staff discussed the height at which signs should be fixed to doors or walls when it was recognised that confused old people do not appear to scan the environment. As nothing could be found in the literature to support or refute this observation, the signs were fixed about five feet from the ground at approximately eye level.

Prompted Voiding

The second set of nursing interventions examined as single case experimental studies was concerned with (a) increased fluid intake, identified as unsatisfactory in several studies (Spangler et al.,

1984) and in the preliminary studies; and (b) prompted voiding: an hourly offer of a drink was combined with an invitation to use the toilet (intervention B). After six weeks overt prompting ceased. Prompted voiding has been included in the rubric of behavioural psychology: observations before and in the course of this study, suggested this to be part of the tacit knowledge of practice.

Instruments

The instruments used in the study were selected or designed for the purpose of patient assessment at different points in time in keeping with time-series methodology that underpins single case experimental studies. The essential feature of this method is the repeated measurement of the behaviour of interest over time.

Barthel Index (Appendix 1). Comprising two parts designed to assess self-care ability as well as mobility, and scoring from 0-100 on a three-point scale, the Barthel Index has been shown to give an accurate measure of disability, valid for recording change. Five bands, or cut-off points, reflecting increasing reliance on others for help in basic activities of daily living, show a progression from total independence (100) to total disability (0). The Barthel Index has been designed to include most items in two-thirds of all developed instruments, is simple to use and has good inter-rater reliability (Granger, 1984). Gresham (1980:367) states that: ". . . the frank preferential weighting assigned by the Barthel Index to continence and mobility commends itself as a professionally shrewd prioritisation of the most crucial activities of daily living skills". Patients were assessed by the researcher in conjunction with a member of the nursing or care staff on two occasions. The key criterion was usual, rather than best, performance over the past four days.

Information-Memory-Concentration Test (Appendix 2). This was taken from one section of a Dementia Scale designed by Blessed et al.

(1968). The section of the overall scale was designed to assess a patient's performance in terms of orientation, remote and recent memory and concentration, areas that have been shown to differentiate dementing and non-dementing elderly persons. On the 26-item scale a correct answer (positive score) was scored one, and the overall score ranged from 0 to 37. Though there is no evidence of validity or reliability, the test is similar to the highly respected Isaacs-Walkey Test (Kane and Kane, 1981).

Orientation Index (Appendix 3). This short index was based on a study by Gilleard and Riordan (1981) that sought to improve psychiatric patients' ability to find their way around a ward area. A ten-item orientation scale with a three-point scale of independence/prompting/cannot do was used to assess patient's orientation to space and ability to find the nearest toilet from a variety of locations within the ward or home area.

Self-toileting Chart (Appendix 4). This form, designed to assess the patient's ability to manage the complex chain of behaviours needed to use the toilet, was based on the principles of backward chaining described in psychological literature (Barker, 1982; Barraclough and Fleming, 1986), and included 25-items scored on a three-point scale ranging from complete independence to total dependence.

Incontinence Profile (Appendix 5). A composite form collated temporal, spatial and organisational aspects of the ward/home, and gathered information specific to the individual patient, his urinary and bowel habits and any prescribed drugs. Sensory deficits were also included. Finally, an incontinence profile, designed to gain insights into the dialectical interactions between the physical environment and the individual, was incorporated into the assessment form which was completed by the researcher in conjunction with at least two members of the nursing or care staff.

The latter three instruments were reviewed by two colleagues (N.R. and E.S.) working in the Nursing Research Unit, for face and construct validity.

Signs (Appendix 6). Signs used in the residential home and in the hospital ward were printed using three-inch black lettering on a luminous red background as recommended by the Department of Health and Social Security (1981).

Negotiating Access to the Study Sites

Permission to enter the study sites was gained in the first instance from the Chief Area Nursing Officer and the Area Nursing Officer (psychiatry). In the voluntary homes, permission was granted by the Secretary to the Board supervising all aspects of social work undertaken by the organisation.

The Principal Nursing Officer in the first hospital, who welcomed interest in this aspect of nursing practice, suggested an early approach to the Ethics Committee through a nursing officer who was a member. Permission to proceed was readily obtained at this stage and liaison was passed to the Senior Nursing Officer (geriatrics), and through his Nursing Officers to the ward sisters and charge nurses. A written outline of the preliminary studies, stressing the need to develop and refine approaches and methods, was presented and the interest and support of individual wards canvassed. At no time was permission given to speak directly to ward sisters and charge nurses. Extended delays of several weeks occurred at this point. When permission was finally gained to enter a ward area, simply to gauge difficulties of assessing and recording patient-nurse interactions, a letter from the Senior Nursing Officer clearly stated that permission had been sought and gained from the three psychiatric consultants. It was therefore surprising, after only three days in the ward area, to be asked to leave the ward by an enrolled nurse who had the support of one of the consultant psychiatrists. Only

through the persuasive and determined efforts of the Principal Nursing Officer did the consultant agree to a meeting the following week, rather than some six weeks later as he originally proposed.

On meeting the psychiatrist, who agreed that the problem of UI was real and in need of investigation, ethical issues of conducting any form of research on persons who could not give informed consent were discussed. It was agreed that, provided that no intervention that could not be deemed a part of normal nursing practice was involved; that any adverse effects would result in the immediate termination of the intervention; and that confidentiality for patients as well as staff could be assured, no objection, in principle, could be offered. All these points had been covered in a previous letter to all psychiatrists involved prior to entry to the ward.

The matter probably concerned the extent of threat perceived by some nurses when practice is under scrutiny, but it also reflected the tensions and conflicts that arise when reorganisations take place in the Health Service. It became evident that management were seen to be directing research to those areas seen as problematic and difficult: nursing staff on several occasions urged that an opportunity be taken to 'tell it as it is'. While a painful lesson, this also provided an invaluable lesson in negotiating access. The staff in any ward would have to be able to accept the presence of a stranger: a key concern therefore became how to negotiate this role.

Despite all the difficulties, several days were spent in two long-stay wards where it became clear that, despite the interest of the qualified nurses, further progress was unlikely. At this time an industrial dispute had affected ancillary services, including the laundry services. The sisters, keen to find out the possible impact of UI on rapidly failing services, agreed to carry out a survey of the prevalence of UI for one week. Feedback from this survey provided a means of leaving the site amicably.

Valuable lessons were learnt, particularly concerning research 'effect'. Charge nurses and sisters emphasised the top-down, hierarchical nature of management which was unable or unwilling to address the problems faced by ward staff who were keen to have their point of view recorded. Management, it was clear, directed the researcher to difficult areas.

Toward the end of this first phase, a chance meeting with the Director of Social Work for a national group of voluntary residential homes for the elderly led to an invitation to discuss the area of interest with some of the officers-in-charge of homes. In a neighbouring city one home had requested help and, at this point, negotiating access began to involve a series of 'trade-offs' which were reflected in the ethical and methodological commitment to participatory research: knowledge, information and the plans of the research would be fully shared with those who would participate. The trade-offs took the form of workshops on UI, arranged by and for the staff of the voluntary homes, and which took place in three Scottish cities. Again, these provided valuable insights into the perceptions and attitudes of people caring for the elderly as well as ways in which that care was organised. Designing workshop materials was an excellent, if unconventional, way, not only of 'reflecting-in-action', but also of 'reframing the problem' in a language comprehensible to, and in keeping with, tacit knowledge as used by the staff.

Following these endeavours, access to the second research home which cared for the confused elderly was straightforward: credibility had been acquired. By this time it was possible to be involved in the study on a part-time basis only. Once again, negotiating access to a National Health Service site seemed problematic. But an invitation to talk about UI to night staff of a smaller psychiatric hospital led to another invitation from the nursing officer in charge of in-service education to talk on the same subject. Some of the sisters and charge nurses expressed interest and, at a point when two new charge nurses who could not be held responsible for previously

poor standards of care were appointed, the route to the final site was opened. The ward was another archetypal back ward but the new charge nurses were interested and willing; management was supportive and the study had the support also of the psychiatrists.

Negotiating the Role of Participant Observer

Recognising that recording data would impose an additional burden on the nursing staff, it was agreed that, as much as possible, the researcher would work alongside the nurses and care assistants, particularly when introducing the nursing interventions. On the first day in the ward, and after outlining the study to all the nursing assistants on the staff, one of the nursing assistants, noting an absence of uniform, offered a loan of one of her dresses "if you really are going to work with incontinent patients". This offer was gratefully received. Some days later comments about the unsuitability of the garb of a nursing assistant were made; a colleague from the Nursing Research Unit passed by with no sign of recognition. It seemed that the researcher had merged into the background, gaining 'street credibility'. Through the adoption of this somewhat unconventional role, a greater understanding of the perspective of the nurses was possible. As it became impossible for them to give answers based on a notional ideal, the patterns of their interactions and the rules by which they worked became clearer.

DATA COLLECTION, RECORDING AND STORAGE

Data were collected by direct observation of the physical environment and of the interactions between nurses and patients in relation to toileting or UI behaviour as these occurred. Informal questioning of nurses and care assistants took place either during the course of the work (nursing assistants) or in a group meeting

(care assistants). Ward sisters, charge nurses and others acted as key informants, giving additional explanation or confirmation when necessary.

Observations and responses were recorded as soon as possible, though not in the presence of any of the respondents. The advantage of post hoc recording was that reflective questions arising from the day's observations could be added. Whenever possible, quotes were noted. Observations and responses were recorded in a hard-backed, laboratory-style book.

In each of the preliminary sites, observational data were collected over the period of two weeks. Charts (Appendix 7) related to episodes of UI were collected on a daily basis from the hospital wards and from the residential homes once per week. Though this is a limited time to collect data relating to UI, past experience of trying to collect ward-based data over several weeks revealed a decline in recorded episodes after the first week, more readily attributed to a reduced attention span than to any change in patients' habits (Smith et al., 1983).

In the main studies, observational data were collected and recorded in a similar way over a span of six weeks in the residential home and over a 12 week span in the psychogeriatric ward. The action research component required a greater and more prolonged interaction between researcher and colleagues to improve participant comprehension and to facilitate a reframing of the problem.

In the single case experimental studies a baseline of relevant data was established for each case. This consisted of assessment of self care ability measured by the Barthel Index; of memory and concentration following Blessed et al. (1968); where relevant, of self-toileting ability and of orientation to the location of the nearest toilet. A composite incontinence profile was also completed. Finally, a baseline of toileting use (A) that included a record of

episodes of UI was collected for a two week period before the first intervention (B).

The single case study took the shape:

A/B/A

Procedures for the recording and storing of data were derived from the work of Schatzmann and Strauss (1976) and Yin (1984) who recommended the creation of a data base from notes created as soon as possible after observations were made and the inclusion of any charts, archival material and any other relevant documents.

Coding the Data

To code the data, coloured pens were used and data were sorted into (a) **observational notes**; records of events, who spoke to whom and so forth; (b) **theoretical and problem-related insights** based on interpretation, hunches, possible links, and (c) **methodological notes**, comments, questions and 'reflections-in-action'. A special group of observations related to the form of language used by the nurses.

Data Analysis

The main theoretical propositions which were noted in the summary of the theoretical framework, and which were reflected in the study questions, served as a guide to the data collection and to strategies for the analysis of data.

Analysis of field notes, responses and observations, allowed data to be coded and categorised. Level I analysis (Yin, 1984) simply grouped and sorted responses and observations into categories derived from the work of Cherniss (1980) to provide a descriptive background

of the organisation. Specific attention directed to the management of UI was further related to the survey of prevalence in each ward. Level II analysis related data in terms of patterns in the derived categories to the research questions for each individual case. At level III comparisons across cases were made.

In the two main cases the analytical procedure was similar to that for the preliminary study. In the single case experimental studies a baseline was established by measuring the number of episodes of UI over a period of two weeks. If the result was consistent with the figure obtained during the whole ward survey, these figures were averaged out and provided a basis upon which a forecast of probable occurrence in the future if the experimental procedures or interventions were not introduced. Such measures are sufficient to establish whether a change in the level forecast at the baseline has taken place and the approximate magnitude of that change (Risley and Wolf, 1976:178). Again at level III, comparisons were made across cases with the ward or home as well as between the ward and home.

Analysis at level IV related research findings to the research questions, seeking to match observed patterns in all cases to the two rival propositions outlined in the theoretical framework.

Limitations of the Study

Patients in psychogeriatric wards and residents in residential homes are individuals and not representative of a population sample. Nor were any of the wards or homes necessarily representative of any wider population. Each ward and home has a unique culture. Indeed, the setting of the second case study of a residential home was not representative as it was unique in Scotland in its pioneering approach to the case of confused, old people. Patients, residents and settings were, however, comparable in important ways: these were

elderly, confused people who suffered from UI and who were living in some form of institutional care.

In the hospital studies a further limitation related to an inability to gain access to the few wards that cater solely for patients with senile dementia (Alzheimer's type). The patients described in the hospital studies were confused, but the confusion was not necessarily associated with senile dementia (Alzheimer's type).

The study design was selected with deliberation, therefore, to permit the examination of individual differences as well as similarities and to allow comparisons. Generalisation to some statistical population is therefore inappropriate. Case studies, like experiments, are rooted in replication generalised to theoretical propositions.

CHAPTER FOUR

STUDY FINDINGS AND DISCUSSION

Generalisations that are sound resemble a large scale map of an extended terrain, such as an airplane pilot might use crossing a continent [but] if one explores on foot the details are what one learns first. Their meaning and relationship emerges only gradually.

(Barrington Moore, Lord and Peasant in the Modern World, 1970, p.x)

THE PRELIMINARY STUDIES

Introduction

The preliminary studies were undertaken in two wards identified as Ward A and Ward B, and in a residential home identified as Princess House. Wards A and B were part of a Victorian mental institution with basically rectangular, Nightingale-style wards that had undergone various upgradings over the years, but pipe and sewage lines were fixed and left little room for manoeuvre in respect of toilet arrangements. In both wards a clear separation between sleeping and day space was maintained. In the day areas a small room had been constructed to form a dining area with seating at separate tables, each for four patients. In the dormitory areas, rooms housed four to six patients, and each patient had his or her own bed with a locker and a very small wardrobe. The residential home was a large detached Victorian villa to which had been added a wing with additional sleeping accommodation. The principal day areas, the lounge, dining room and the administration offices, were housed in the main building.

Ward A

The environment of care

In Ward A the main toileting area comprised four separated cubicles set in an enclosed room with a row of handbasins. Apart from a small illuminated sign that showed the EXIT, little use was made of prominent or striking signs. The toilet area, for example, was indicated by a small board, approximately 8" x 2", on which was painted in white lettering on a beige ground, the word TOILET. This suggested that staff perceived patients either as having the ability to understand, organise and interpret their environment, or that

patients would be guided or directed to appropriate areas like the toilet by nursing staff.

Different parts of the ward were extensively used at different times of the day and quite neglected at another. In a process that was like a kind of daily migration, patients moved en masse into the day area from the sleeping quarters. People were congregated mainly around the periphery of the area, and though this facilitated the task of supervising patients, of whom several had to be closely watched for destructive behaviour, it further increased an already congregate pattern of living.

Two charge nurses, one staff nurse and one enrolled nurse made up the qualified staff. In addition there were eight nursing assistants with experience in the field ranging from one to fourteen years. The aim at each shift was to have one qualified nurse with assistance from four nursing assistants.

Ward A contained 30 beds for female patients in the age range 74 to 92 years. These patients were a mixture of 'graduate' psychiatric patients with some more recent admissions suffering from a dementing illness. No objective measures of self-care ability or of mental status were used by the nursing staff, but the opinion of the nurses was that competence in basic activities of daily living (ADL) was severely compromised in a few patients, and moderately compromised in most patients. Only a few (about six) patients were described by staff as "not too bad though they can go off [their feet] fairly quickly".

A nursing record for each patient was held in a Kardex system, but there was no evidence of deliberate, planned care though this was talked about by the nurses as something to be introduced. Opinions varied about the usefulness of, and need for, care plans, with several qualified nurses expressing a negative view. These nurses rationalised that, as patients' needs for nursing care changed very little, a written plan of care was superfluous: a bathing book and a

bowel record would adequately cover most problems. Unwittingly, therefore, the nurses subscribed to what could be termed a minimalist approach that ensured, at best, adequate care, and consequently UI was not identified as a problem in need of solution.

The patients' day

The patients' day was set in a time-patterns as a series of events: up, washed, toileted and dressed, then breakfast. After breakfast, further toileting, then, unless this was a bathing day, sitting in the day area until the next segment of the day began: this could be morning coffee, pre-lunch toileting, or lunch itself. If coffee or tea was not distributed, patients were rarely seen to have any fluid. This meant the total daily fluid intake was limited and, based on observations, could not have exceeded 1000 ml.

One of the most striking features of the patients' day was the extent of the fragmentation of care. Different members of staff approached a single patient, interacted briefly and with purpose, and moved on. The sequence of events for the rest of the day was always similar: a short burst of activity, almost always triggered by the nursing staff, and focused on basic activities of daily living, like eating or elimination, followed by an extended spell of blank inactivity. Patients who were not being bathed spent the morning dozing in a chair, though some of the 'wanderers' moved about the ward. In the afternoon, during the overlap between shifts, nurses took a few of the more mobile patients to the nearest shopping area. As the day waned, restlessness and seeming agitation increased; door handles were rattled and several patients asked to leave, to go home to look after children, and so forth. Although the bursts of activity occasioned by supper, putting some of the more frail patients to bed and further toileting, were as great as in the morning, the number of available nurses decreased. More overt episodes of a nurse dealing with an episode of UI were observed during the evenings than during the mornings when UI was masked by the toileting rounds: UI happened, but unless it intruded overtly

into the nurses' consciousness as a puddle, it was contained by the pads.

On one occasion, following an episode of UI, a nursing assistant approached a recently appointed staff nurse, saying: "That's Mrs ---- wet again. What do you want done?" The staff nurse indicated her puzzlement and the following exchange took place:

Nursing assistant: "Well, do you want us to dress her in day clothes or night clothes?"

Staff nurse: "What do you usually do?"

Nursing assistant: "If Sister's on we'd put on her day clothes, but if she's off we'd put on her [night]gown, and maybe pop her into bed."

Staff nurse: "Just do what you usually do."

This excerpt from the field notes, written shortly after the exchange took place, illustrates two points: (1) that dual standards of care are practised, and (2) that young, junior staff nurses find it difficult to challenge the practices followed by the permanent and experienced work force, the nursing assistants or auxiliaries.

The nurses' perspective

The nurses' day was spent in a repetitive cycle of delivering care related to washing, dressing, eating, toileting and, if necessary, changing patients. For the nursing assistants, the overall perception was that one needed to 'know' only basic nursing care. Recent recruits as nursing assistants had a few days' induction, but for the most part skills and procedures were learned 'on the job'. Some nursing assistants had learned under the tutelage of a ward sister or staff nurse but most had learned to mobilise, lift and clean patients from other colleagues. Nurses described the daily work as routine with most patients needing a form of care that was 'just basic nursing'. No one felt any new techniques or skills had been learned in the past six months, and estimates of how long it would take someone to 'learn the ropes' of the ward ranged from a few days to a month. Similarly, no one thought discharge home to be a likely prospect for any of the

patients in their care: "This is their home" (nursing assistant; staff nurse); "No, our patients are likely to be here for the rest of their lives" (Sister).

Unlike the situation of the patients where interaction between nurse and patient was intentional but brief, for the nurses several such interactions were undertaken in a serial fashion, creating intensive bursts of activity. The fury of this activity was not in itself determined by the nurses, but was occasioned by the need to synchronise nursing activities with the activities of ancillary staff, mainly those in the kitchens. The effect was illustrated one morning when a porter, arriving to collect the kitchen trolley, remarked that Ward A was never ready and that his entire schedule was being interrupted. The ward domestic, who was collecting in dirty dishes, rebuked the young staff nurse for giving patients a second cup of tea: she was too slow. Later the staff nurse admitted finding it difficult to accommodate to this pace which she saw as conflicting with the needs of the patients:

Poor souls. They enjoy their cup of tea, and it helps to keep their fluid [intake] up. But it's such a rush in the morning. You try to make sure they're getting enough to eat and drink, but we're always in trouble with the kitchens. They simply don't understand how long it can take to get some of them to eat. If it's not down fast enough she [the ward domestic] has it whipped away.

(Staff nurse, Ward A)

Constraints were imposed on the ways in which nurses could carry out their work by changes in policy initiated (and some thought, imposed) by management. Much discussion was concerned with a new policy instituted in another ward where the nursing officer had banned the use of commodes, insisting that at all times patients must be walked to the toilet. Most of the nurses felt this was unjustified. Some gave as a reason the ability to use the commode as a seat when dressing a patient in the morning. One nurse who had recently been on a spell of night duty was adamant: without access

to a commode during the night, whole beds would have to be changed, increasing not only the workload but also the risk of skin breakdown.

The nurses were ever caught in a dilemma of needing to get through the work quickly in case someone was 'lent' to another ward, or, if the work was finished too quickly, of being accused of being overstaffed and standing around. Divisions were very sharp: patients who were able and seen to benefit from diversional therapy were sent to a communal centre, leaving the nursing staff to wash, clean and feed the 'hopeless cases'. According to the nursing staff, it was highly unusual for therapists to visit the continuing care wards but the uncertainty of holding staff when the routine work was finished was used as a reason for not attempting any kind of diversional therapy.

Qualified nurses undertook the same activities as the unqualified nursing assistants and, in addition, took charge of the ward, dealing with its administrative and service requirements as well as dispensing drugs and medicines. These nurses were more likely to see patients' problems as complex and to perceive the benefits of a social as well as a medical history. But the really difficult work of the qualified nurse lay in the supervision of the unqualified staff members. To ensure that essential work was done, tasks were allocated to an individual or, more often, to a group of individuals. In a ward where the work is fragmented to any degree, there exists a collective responsibility vested in one, or, at best, a very few individuals. This person holds most of the formal knowledge about patients and their care, which may or may not be shared with other members of staff. The qualified nurses were expected to coordinate care in a system that was antithetical to individualised care.

Many of the nursing assistants, particularly the older ones, believed the ward would function quite adequately without a qualified nurse. As the only difference between the work of the two groups was seen to be related to the administration of drugs and keeping records, the result was a strong hierarchy. The nursing assistants

swung into action with a keen sense of time, and 'knew' that to get through the toileting before lunches were served, the routine had to begin no later than 11.45 a.m.

Toileting

In the course of the day five toilet rounds were observed. The most usual practice was for a nurse, or sometimes two nurses, to approach a patient. Sometimes a reference to visiting the toilet was made, but at other times patients were just helped along. For those patients who were able, a verbal reminder was given, e.g. "Mary, I think you should use the toilet before lunch" (nursing assistant). Less commonly a patient would approach a nurse and ask to be taken to the toilet. On such occasions the nurse would either take the patient or 'point her in the right direction', in effect reminding the patient of the location of the toilet.

Urinary incontinence

Everyone agreed that UI was a problem, though estimates of how many patients were incontinent were qualified by an 'it all depends what you mean' clause. Not everyone would accept a definition of involuntary loss of urine in an inappropriate place, for example. And criteria of occasional UI as less than twice per month were seen as meaningless by most staff. One patient who scurried around the ward clutching a kidney dish into which she urinated was cited as exemplifying the issues. Some nurses recognised this lady as incontinent as she urinated in an inappropriate place, while others saw a behavioural problem possibly associated with a phobia. Another staff nurse thought the source of the problem could be gynaecological and felt the patient should have a specialist opinion. But the nurses were unable to persuade medical staff that investigation was justified.

Urinary incontinence was defined in terms of wet clothes or puddles on the floor by the nursing assistants in particular.

Puddles were attributed to 'an accident', as were most of the episodes. The phrase most often heard was: "She's wet". "Poor souls! They can't help it", was one of the most commonly held views.

The only available aids were a brand of absorbent pad measuring about 18" x 6" and held in place by stretch net underpants (ideally) or, more usually, by available undergarments. Problems arose with small, frail women for whom these pads were too bulky. Without exception nurses complained about the incontinence pads, questioning whether any kind of evaluation had been undertaken.

Few investigations had been undertaken, though for one patient who seemed more than usually incontinent, the Sister discussed with the staff nurse the need to have the doctor authorise a specimen of urine for bacteriological investigation saying, "It's not long since she finished the course of Negram but it looks as if she needs something else" (Sister, Ward A).

Survey of urinary incontinence

Episodes of wetness related to UI were collated for each patient in the ward over the period of one week (Table 15). Daily charts were provided on which a number from 1 to 30 was entered, with each number corresponding to a patient's name on the Kardex to ensure confidentiality. The nurses were asked simply to record every episode of daytime UI and/or wetness observed at the routine ward changing rounds as well as between rounds. No attempt was made to count the number of pads used, items of soiled clothing, nor the actual use of the toilet.

TABLE 15: Episodes of urinary incontinence, by number of episodes per patient per day, Ward A

Day	Number of Episodes						Total
	0	1	2	3	4	5	
1	13	7	4	3	1	2	38
2	12	3	6	5	4	0	46
3	13	3	4	5	4	1	47
4	12	9	1	6	1	1	38
5	11	6	7	4	1	1	41
6	12	7	1	2	4	3	46
7	14	3	5	3	3	1	45
							301

(range 38-47: mean 43)

Five routine toileting rounds were carried out by the day staff. The total number of episodes of wetness was 301; eight episodes outwith the routine rounds were recorded, and the peak time for episodes was in the late afternoon. Eight patients were completely continent; six patients had five or less episodes and three had between six to ten episodes. Eight patients had between 11 and 20 episodes and five patients had more than 20 episodes during the week. The group of continent and occasionally incontinent patients constituted two-thirds of all patients: the bulk of the work associated with UI was therefore concentrated upon one-third of all patients who accounted, on average, for 68% of all episodes (range 51-80%).

This group of persistent and heavily incontinent patients included those patients who needed also to be walked with two nurses, and often also to be fed. Thus they constituted the least competent

patients in terms of self-care ability, and in theory were most vulnerable to environmental stress.

Ward B

The environment of care

As Ward A, Ward B was a basic Nightingale-style, rectangular, locked room with separation of sleeping and day quarters and with a small dining area. During the day the sleeping quarters were kept locked to prevent access for those patients who voided bowel and bladder contents in inappropriate places and, to ensure the maximum supervision for other, very disturbed patients. The toilets, which were Victorian, were open, three-in-a-row, and afforded no privacy whatsoever. No signs or any other means of showing the location of the toilets was in evidence.

The environment was impoverished. It was neither perceptually comprehensible nor did it support orientation or direction-finding. Searching in institutions for the mentally handicapped, the ward sister had been able to acquire a large foam mattress for the frail old men who huddled in a too large chair where they were in danger of falling to the floor, or who curled up in the foetal position. Patients had no personalised space and, though nursing management was encouraging greater personalisation of bed space, the staff saw this as ineffective as the greater part of the day was spent congregated in the day area, and because so many of the patients were destructive of their own and other people's property.

Ward B was recognised throughout the hospital as housing the most behaviourally regressed patients. The staff consisted of two recently appointed charge nurses, one enrolled nurse and a complement of eight nursing assistants who cared for 28 male patients aged from 67 to 89 years. As in Ward A, many of the patients were 'graduates' of the institution with diagnoses that included chronic schizophrenia

and Korsakow's syndrome as well as dementing illnesses. Nursing records were maintained in a Kardex and there was no evidence of planned care. Though no formal measurement of dependency characteristic was made, nursing staff saw six patients to be in need of total nursing care, including feeding. One of these patients sat curled in a foetal position, while two others were physically very frail.

The patients' day

As in Ward A, the routine tasks of getting patients up, washed, toileted and fed took up most of the available nursing time as altercations and aggressive attacks by patients diverted and delayed the nurses. At least three patients were identified as urinating in an inappropriate place. Help to hold or restrain a patient was often needed. On those days when staff were particularly short, the nursing officer tried, not always successfully, to find replacements. The overall view of working in the ward was expressed in phrases like 'battling on' and 'the endless battle'. No patient was ever discharged home though it was felt that, if technical nursing was needed, the patient would be transferred to another ward or hospital, "though they wouldn't keep them for long" (charge nurse, Ward B). Almost all of the patients in the ward had been transferred from another ward because of disruptive behaviour. Thus, to resolve problems for staff and patients in another ward and to rationalise staffing levels and skill mix, management, in effect, intensified and located problems in one area.

The two charge nurses were keen to initiate changes, particularly as the ward was due to be upgraded in the near future, and were keen to move away from the highly custodial manner of care nearer to the ideal of a therapeutic milieu. To achieve this, they were trying to decrease medications and increase therapeutic interactions. The sister in particular felt this might have an effect on levels of UI because: "These were not docile and regimented patients. Sister ... argues that the nature of the environment, including increased

interactions with disturbed patients, may lead to an increase in UI as an attention-seeking device" (Field notes).

The nurses' perspective

Though the charge nurses had been appointed to this specific ward, the nursing assistants had been sent there. Posting to this ward was seen as a form of punishment in the views of the charge nurses and two of the nursing assistants who acted as key informants. In the Sister's view, morale was low and was manifest in very high levels of short-term absenteeism. She felt the low morale was associated with the amount of work entailed in cleaning and changing soiled patients.

As in Ward A the basic pattern of the day was created by the institution, particularly by the portering and domestic services and by the laundry. Huge bags of soiled linen were sent daily to the laundry, and when the clean linen was returned, several hours of nursing time were occupied in putting this away.

The domestic services affected the use of the ward by the nursing staff. Toilets, for example, were unavailable shortly after breakfast as the domestic staff washed and cleaned this area, and then locked it to keep it clean and dry, and to minimise falls on the hard surface. As a consequence, nurses rushed to complete the toileting round after breakfast and before the domestic staff moved in.

All staff were critical of the pharmacy who, it was widely held, bought the cheapest available aids and failed to evaluate their effectiveness, and most importantly, failed to consult or listen to the end-users. Similarly, the person who had changed the clothing supplier was seen to know or understand little or nothing of the difficulties of stripping and changing clothes saturated with urine. The proposed appointment of a clothing manager was cautiously welcomed as a step in the right direction, but this appointment had

taken two years to be approved. All of the nurses were highly critical of the quality and design of clothes supplied by the hospital.

The disruptive and aggressive behaviour displayed by many patients was felt by all staff to be stressful: much of the work was seen to be unpleasant and dirty with few rewards. Management and other outsiders were seen to be quick to apportion blame and censure but rarely gave overt support and encouragement. Nursing assistants were less than enthusiastic, none of them finding any intrinsic satisfaction in the job though two older women recognised that it was a job that had to be done and felt pride in being able 'stick it out'. Though the two charge nurses saw their attempts to introduce change as a challenge, a basic understanding of the long and difficult process of change and how to introduce it was lacking and not available from either management or from the education sectors. There was no evidence of planned care: nursing records were kept in a Kardex.

Toileting

Four toileting rounds were carried out daily. There was no attempt made to take all the men to the toilet after lunch though anyone who was obviously wet was cleaned and changed. The nurses worked very fast, escorting, toileting and, if necessary, changing clothes. Most of the interactions between nurses and patient were conducted in a detached and impersonal manner.

Urinary incontinence

The nursing staff estimated that, of the 28 patients, 20 were doubly incontinent, and a further three were incontinent of urine only. Though UI was recognised as a problem, clinical investigations were uncommon. Aids and equipment for the management of UI in males are recognised as less satisfactory than those designed for female patients. The type of external collecting device supplied by the

pharmacy did little to keep patients dry, and leakage around these devices necessitated a full change of clothing below the waist. The main problem in relation to UI identified by qualified nurses was poor equipment, while nursing assistants thought more staff were needed.

The overall view was that most patients were incontinent of urine which was defined in terms of wet clothes. But one of the biggest problems was caused by those patients who urinated in inappropriate places. The reasons for this behaviour, and possible solutions, were extensively discussed by members of staff. Gradually it was acknowledged that this was not entirely random behaviour: that certain places were favoured; a particular cupboard, a bag of always clean, never dirty, linen, or behind a certain radiator. Something about these sites, it was agreed, served to trigger this behavioural response from the patient. This is an area in which more research is needed but, as the total environment lacked even basic legibility, it was difficult to take these insights forward in this setting, where was no visual or perceptual information available for patients.

Survey of urinary incontinence

Observations related to episodes of wetness and UI were gathered and collated in the same way following the procedure outlined for Ward A (Table 16). The total number of episodes recorded during the week was 379. Forty episodes of urination in an inappropriate place were also recorded.

In the course of the week only three men were fully continent; six men had had five or fewer episodes and another three men had between five and ten episodes. But five men had to be changed in excess of 26 times during the day in the course of the week, placing an enormous strain on laundry and linen services. In the middle ranges, between 11 and 20 episodes of UI were recorded for seven men. Overall, 16 of the 28 men (57%) were heavily and persistently incontinent of urine and accounted for more than 90% of all episodes.

TABLE 16: Episodes of urinary incontinence, by number of episodes per patient per day, Ward B

Day	Number of Episodes						Total
	0	1	2	3	4	5	
1	8	6	2	5	4	3	51
2	10	4	2	4	7	1	53
3	8	3	1	8	7	1	62
4	8	3	7	5	5	0	52
5	9	5	2	4	6	2	55
6	9	4	4	4	7	0	52
7	9	3	6	3	5	2	54

379

(range 51-62: mean 54)

Princess House

The environment of care

The third of the preliminary studies was carried out in a residential home for the elderly, thus presenting a different perspective and culture. Thirty-four residents, seven male and 27 female, aged between 79 and 93 years, lived in Princess House. Though most of the residents were physically frail, on admission to the home each person had been continent and self-caring in terms of mobility, washing, dressing and feeding. Over time it was recognised that some degree of deterioration had taken place, and at the time of the study seven residents used a walking frame; seven were identified as 'confused', and 15 were identified by the staff as 'wetters'.

The home itself was a large detached Victorian villa to which had been added extra sleeping accommodation. Most residents had a single room with a few shared by two persons. The corridors were about 30 yards long in the new wing, with the toilet accommodation situated at one end. Some residents therefore had a fairly long distance to traverse between their room and the nearest toilet. In the main day area, residents had to leave the lounge to walk to another part of the floor to find the toilet. No signs were in evidence passing through at least two heavy doors. There were no signs to show the location of these toilets. An additional small sitting room with an adjacent toilet was situated in the basement of the home.

The officer-in-charge of the home was a registered general nurse who held also a qualification in district nursing. Her deputy held an intermediate qualification in social work. Both the officer-in-charge and her deputy dealt mainly with the administration of the home and were required to assess applicants for admission for suitability and ability to 'fit in' with other residents. All records pertaining to the residents were held by the officer-in-charge.

Basic help and care was given to the residents by six care assistants during the day, and two overnight. The home was autonomous in terms of cooking and cleaning which enabled the direct care staff to be slightly more flexible about the timing of meals or getting patients up in the morning, for example.

The residents' day

Residents were wakened by the day staff and helped to wash and dress, if necessary. Breakfast was served and any any medicines dispensed. Residents who were able, and who wished, could go out. Coffee, lunch, tea and supper were served at fairly well established times thus forming the kind of loose structure that is part of any day. But many residents did not go out and, like the patients in

hospital wards, sat in chairs, watching television or looking out of the window. As residents were deemed to be self-caring, there was no question of any kind of routine toileting round. In principle, help was available for any resident who needed assistance. But with an increasingly frail population in need of more and more assistance, staff to provide the required help was not readily available.

The care workers' perspective

A recent innovation throughout the homes had been the introduction of a 'key worker' scheme where an individual care worker was identified as the 'key' person to interact with the resident, acting, if necessary, as an advocate, a channel of communication with authority/management, and the person who would identify and help to resolve problems. To the surprise of the Head Office, the key worker scheme, which had run into difficulties elsewhere, worked particularly well in Princess Home. Each care worker had a small group of residents for whom she acted as the key worker, and groups had been formed of the hard of hearing, those with visual difficulties and the confused. Care staff had themselves chosen their areas of interest to complement what they saw as their skills. The woman who worked with the hard of hearing knew that the pitch of her voice improved her communication with the hard of hearing. None of these care assistants had any formal training though all had attended study days run by the organisation on care of the elderly. The pattern of the care assistant's day was to look after the needs of the residents for whom she was the care worker, and to help when and as needed. Her work was augmented by volunteers from the local church and its organisations. Staff knew little of behavioural principles but firmly rejected any practice that might compromise individual dignity. Like their counterparts in the hospital service, the care assistants felt the problems associated with UI would be resolved by more staff.

Toileting

As there was an expectation that the residents were able to manage their own care with minimal help, neither the staff nor the home itself was geared to coping with demands for additional help with toileting. There was, for example, no means of calling for assistance from the lounge and the residents were dependent upon a member of staff calling in to see whether help was needed. The care staff were reluctant to use a call bell or a timer set for two hours (as recommended by the continence advisor), feeling that this would draw attention to an individual's difficulties and create stigmatisation.

Urinary incontinence

The approach to understanding the home's perspective on the management of UI was, of necessity, somewhat different to that employed in a National Health Service hospital. Accordingly, initial meetings with care staff were arranged to provide a brief and simple understanding of the main reasons for UI in the elderly. The concept of the 'accident' (Figure 10) was used to illustrate the fundamental, predisposing and precipitating factors in UI. As Baldamus (1961) has shown, accidents do not occur in isolation; they are not unilinear, simple cause-and-effect. An accident, even UI, occurs in a social situation in which a distinction can be drawn between categories of events: fundamental, predisposing and precipitating.

The main problems related to UI in the eyes of the officer-in-charge were getting help and support from the general practitioners and district nurses. It was difficult to get appropriate aids: little guidance was available concerning the merits and demerits of different products. But, for the care assistants, more problems were associated with the environment of care. In analysing the data related to UI, the care staff could see that Miss B., for example, was 'wet' only once per day, in the evening. What happened at that time of day? On reflection, staff agreed that Miss B. always had a

Fundamental	Predisposing	Precipitating
Damage to cortical controlling mechanism	Urinary tract infection	Distance to toilet
Damage to spinal cord	Faecal impaction	Routine care
Pelvic floor damage	Low fluid intake	Poor staff/patient interaction
Prostatic hypertrophy	Confusion	Low staff ratios
Neoplastic disease	Drugs including: diuretics cholinergic	Use of restraints (chemical or physical)
	Diminished volition	
	Apathy	
	Attention seeking	

FIGURE 10: Concept of accident as related to urinary incontinence: fundamental, predisposing and precipitating factors

visitor, and possibly she was reluctant to go to the toilet as her caller would likely depart. It was agreed that Miss B. could be reminded to visit the toilet before her visitor came.

For other residents the identified problem was associated with the distance to the toilet. But on this occasion the proposed solution was decided by the officer-in-charge who directed those residents to the basement sitting room, close to a toilet. The following extract was taken from notes made at the time:

The care staff were waiting for me when I arrived. Mrs M. (the officer-in-charge) was away for the day and they could explain to me themselves some of their worries. Apparently the residents stayed in the downstairs sitting room for two or three days and then demanded to be sent back to the main lounge with its view to the street. They came up ready to 'do damage with their zimmers' according to N. (care assistant). And the care staff agreed that the solution was unacceptable. After we had discussed the difficulty of getting to the toilet, they proposed that someone should be available in the lounge as much as possible and that a wheelchair could be used to take slow walkers to the toilet. And they are going to try this out themselves.

(Field notes)

Survey of urinary incontinence

The staff agreed to collect information about episodes of UI in the home but were unused to recording observations on a chart. It was felt that to put a chart on or near the wall of the toilet would serve to identify and stigmatise an individual. Accordingly, each key worker was supplied with a small notebook to carry in her pocket and relevant observations were kept there.

Collecting and recording actual episodes of UI showed the number of residents with a problem of continence to be six (18%). Sixty one episodes of UI were recorded during the week and in line with figures related to other residential homes, and not the

impressionistic 15 persons or 44% of the home population previously identified. Only two of the residents were frequently incontinent if defined as three or more episodes per day (Table 17).

TABLE 17: Episodes of urinary incontinence, by number of episodes per patient per day, Princess House

Day	Number of Episodes						Total
	0	1	2	3	4	5	
1		3	0	2	0	0	9
2		2	1	1	0	0	7
3		3	2	0	1	0	9
4		0	1	0	2	0	10
5		2	1	0	1	0	10
6		1	2	0	1	0	9
7		3	2	0	0	0	7
							61

(range 7-10: mean 8.7)

But the staff came to appreciate the value of regular toileting for certain residents. In the observations made in the small pocket notebook one care worker noted: "M. has been really good this week and hasn't been wet at all. I think it's because she's been taken regularly. She has cooperated well" (care assistant).

Summary of Preliminary Studies

Wards A and B shared certain characteristics, including the structure of the environment and the macro-organisational structure within which care was delivered, differing however in the gender of the populations served. In both wards the routine, custodial,

geriatric model of care identified by Baker (1978) was evident in the marked division of labour between qualified and unqualified staff.

Approaches to the management of urinary incontinence

The approach to the management of UI was exemplified in Ward A in five toileting rounds and in Ward B by four rounds. It was not altogether surprising to find levels of UI and wetness commensurate with those found by McLaren *et al.* (1981). The close checking afforded by the surveys showed, however, that in Ward A more patients were continent or only occasionally incontinent; about one-third of patients who were wet three or more times per day created most of the work. In Ward B, the proportion of severely incontinent men was almost two-thirds, and the problems faced by the nursing staff were exacerbated by poor equipment like the urinary sheaths, badly designed pads suitable for men, and inadequate and badly designed clothing which was difficult to remove. There was ever a chronic shortage of staff.

These findings suggested that the factors identified in the 1960s and '70s by nurse researchers remain unchanged. None of the nursing assistants and few qualified staff had received much teaching about the causes and management of UI in the elderly. Consequently, the only approach that they knew was based on a notional two-hourly toileting regime, which served only to emphasise the tasks of toileting-cleaning-changing.

The contradiction between individual and collective care created asynchronies for those registered nurses whose education had rejected a task-orientation for a more integrated, patient-centred, individual approach. The young staff nurse just beginning to develop expertise had neither the knowledge, authority nor support to initiate changes, and barely knew how to be constructively critical in the face of the reliance placed by senior staff on the permanent and mainly untrained staff. In addition, the control of many segments of the day by outsiders constrained the time available for the nursing staff to

initiate change for which they had not been prepared. Though the charge nurses in Ward B had tried to adapt the environment to accommodate different patterns of behaviour, they faced a challenge, not only from a resistant staff but also from a hospital policy that controlled admissions, and created, not a patient mix, but a concentration, in one location, of patients with severe behavioural problems.

The effect of organisational style

None of the problems revealed in the case studies could be addressed in the routine, task-oriented approach to care that prevailed in Wards A and B. The organisational consequences of a task-oriented approach were reflected in the extent to which patients and nurses were insulated from each other through an hierarchic relationship in which authority and responsibility and, above all, knowledge was vested in a few people or even in one person 'in charge'. With task orientation, knowledge is transmitted through practice and example in the work situation; the boundaries between tasks, patients and nurses are strong, and care is fragmented. Since the same tasks are carried out by everyone, there is no obvious need to plan care. The range of options open to staff are framed by a code of behaviour and approach to patient care and safety which emphasises order (and indirectly a custodial approach), and is communicated from above, down (Webb, 1981). But, as was evident in Ward A, certain tasks may be omitted when the controller is absent. Or, as the discussion about the use of commodes revealed, the framing of options coming from a distant authority, sometimes encoded in a procedure manual, may be rejected as unrealistic, unnecessary or unworkable, and could lead to the adaptive practices of the kind identified by Reid (1975).

The differences between the hospital wards and the residential home lay not only in different settings and in the extent of the problem created by UI which was significantly less than in the hospital wards (Table 18). Residents were more competent in ADL,

but also the environment of care was different: residents had greater privacy and the possibility of more control over daily events, even if this was not always exercised. More important, an explicit philosophy of care, based on the development of an interpersonal relationship, outlined the rights of the individual and facilitated an integrated approach to care.

TABLE 18: Comparison of number of episodes of urinary incontinence by ward/home

No. of episodes	Ward A	Ward B	Home
0	8	3	28
5 or less	6	6	3
6-10	3	3	1
11-15	4	4	-
16-20	4	4	-
21-25	4	3	2
26+	1	5	-
No. of patients/ residents	30	28	34

In a key worker system, evolved from the case-worker relationship, the boundaries between resident and care worker were not as rigid as those between nurse and patient. Each care worker had her own small group of residents for whom she had a particular concern and responsibility. The interactions between care workers and residents, as individuals or in small groups, were of a longer duration and less likely to be associated with physical care. Personal knowledge of the individual plus a greater responsibility to ensure needs were met was devolved to a greater extent than in the

hospital where much of the knowledge pertaining to the individual was encoded in the highly confidential and restricted medical notes. The result was much greater integration between residents and staff. To work, however, the values and ideas underlying an integrated code must be made explicit and shared by everyone, and this requires a high level of consensus across all the staff.

A move to develop more of a case work relationship has begun in nursing through the principles of primary nursing in which one nurse assumes responsibility for the total care of a small group of patients. But in primary nursing it is the registered and qualified nurse, capable of planning and evaluating nursing care, who is the primary nurse. The actual delivery of care can be carried out by an associate.

Neither nurses nor care assistants spoke of UI: more commonly they spoke of 'wetting'. Nor did nurses manage the interaction between person and environment explicitly but sometimes 'pointed' a patient in the right direction or reminded him 'to go'. Their tacit knowledge-in-use was more or less satisfactory for patients who were mobile and slightly confused or forgetful, but broke down in the face of immobile and confused patients. Possibly the practice of two-hourly toileting would have worked better if patients were identified and treated on an individual basis. The wide range of individual differences on a daily basis shows that UI is not a patient attribute over the entire day. In her studies Chanfreau-Rona et al. (1986) divided patients into groups of high and low wetters and had some success in improving continence in low wetters. What is less clear is whether improvements can be made in groups where episodes of UI are more frequent.

THE MAIN STUDIES

Cockburn House

The environment of care

The first of the main studies was carried out in a residential home which had been specially redesigned to accommodate elderly, mentally infirm, individuals (ESMI). Several such homes had been opened by local authorities in England and Wales, but none in Scotland. This home, particularly as it was in the voluntary sector, was seen to be pioneering a different, humanistic and Christian approach to care. The house itself was large and spacious, and set in a prime residential neighbourhood. Land surrounding the house had been sold and a ring of sheltered housing for the physically frail had been built. Thus the house, which was secluded but not isolated, gave a measure of protection for residents who might wander. Three large, airy sitting rooms looked out over a rose garden and across a golf course, and at the other end of a long corridor, next to the kitchen, were situated the dining rooms used by residents as well as staff. There were plenty of bathrooms with available aids to get in and out of the bath, and toilets were located near the dining room, the sitting rooms and adjacent to the sleeping quarters which were on a lower floor. Several rooms were for single occupants and some were shared by two residents. Each sleeping area was personalised with photographs, ornaments and even a treasured piece of furniture. Residents were at all times dressed in their own clothes which were laundered on the premises.

There was little doubt that the environment had been designed to stimulate, improve and increase its legibility. It was perceptually comprehensible to the cognitively non-impaired, and appeared to be comprehensible to the residents, giving an overall impression of warmth, light and calm comfort.

There was accommodation for 30 residents, male and female, some of whom had been admitted directly from the community following referral, while others had been transferred from homes run by the organisation when levels of confusion became intrusive. Approximately one-third of the residents were transferred from a psychiatric institution.

The residents' day

The location of the kitchen in the home itself and the inclusion of the kitchen staff in the team encouraged greater flexibility in the residents' day. Residents awakened at their own time and were given help to wash and dress, if necessary. The timing of a simple breakfast was flexible, between 8.30 and 9.30 a.m. As in the hospital setting, much of the structure of the day was centred on food and eating, but the sharing of meals, with staff sitting with the residents, encouraged a more relaxed, less hurried environment. Interactions between individuals and care workers were observed more frequently and lasted longer, and were less likely to be concerned with physical care. Residents were free to go to their own rooms, which were identified with each individual's name and a photograph, where, if necessary, a care worker would knock and wait before entering to see all was well. There was a considerable amount of social contact, not only with care workers but with volunteers and family members who were encouraged to visit. Interaction with other residents was also encouraged through group activities like bulb planting. Residents were encouraged to help wash and dry dishes in the kitchen and to make their own beds. These interactions, which were often facilitated by the key workers, took place across a range of settings made possible by the available diversity within the home. However, an institutional tendency to locate chairs around the periphery of the rooms persisted.

The care workers' perspective

Care was provided by three officers-in-charge, two of whom (first and third) were nurses qualified in mental infirmity and with experience of care of the elderly, and two of whom (first and second) were qualified in social work with the elderly. A team of eight direct care workers was supplemented by domestic and catering staff and by volunteers. Domestic, catering staff, as well as care workers, were always included in any teaching sessions and were encouraged to learn as much as possible about the care and management of confusion through personal contact and attendance at study sessions, seminars and workshops. Anyone attending a seminar or workshop was expected to share insights with the others. A small library of books and other teaching/learning aids were available for consultation by staff.

The officers-in-charge had been recruited from staff already working within the organisation, while most of the care workers were recruited from the public with preference given to young persons in a youth opportunity programme. A precondition of employment was a commitment to Christian values and beliefs. A feature of the home was the number of persons from other caring organisations, from this country and abroad, who visited to see the approach to care offered by the home. Supportive and caring aspects of working with the victims of dementia were stressed in the induction programmes, and the need to develop a good personal relationship with an individual was emphasised and manifest in the key worker system. Care staff were at pains to stress the unique needs of the individual, taking pride in care of a high and personal quality delivered in a system that used the key worker.

In contrast to the hospital situation described in Wards A and B where it was believed that the work was quickly learned, care staff in Cockburn House pointed out that, though the tasks were often simple, the development of a relationship of trust with a confused, old person took time. Though the work was seen as often demanding,

particularly of patience, staff did not appear to encounter the stress as did staff in the NHS settings. All staff enjoyed working with the elderly and found the work to be personally satisfying. This might have been related to a more supportive and pleasant work environment, or to the simple fact that the inclusion of volunteers in the work force made increased interactions between staff and client possible. Or the difference might be attributed to an integrated approach rather than the authoritarian and bureaucratic approach that prevailed in the hospital settings.

As the home was to form a demonstration unit, considerable care was taken to assess and monitor residents' conditions. As well as a comprehensive psychiatric consultation assessment on admission, any changes in each resident's condition was monitored and recorded. Behaviour was assessed using the modified Crichton Royal Behavioural Rating Scale (CRBRS), in which behaviour is rated on a 13-item, five point scale. The CRBRS includes items on self-care ability, orientation, interest/apathy, social behaviour, sleep and communication. The score range is 0 - 65.

Toileting

As in Princess House, no set toilet rounds were carried out though some residents were reminded by staff to visit the toilet either before or after a meal, "Margaret, would you like to go to the toilet before lunch?" (care worker). Though this approach usually met with compliance, it was not unusual to see residents searching for the nearest toilet. As these were not identified by a sign the residents sometimes displayed an anxious searching behaviour or asked, "Where's the toilet?" In response, residents were sometimes led to the toilet, but on other occasions staff resorted to verbal and sometimes confusing descriptions: "It's the second door on the right. No! that's your left! Your right, the other side. Yes! that's it, in there - good!" (care worker to resident).

Urinary incontinence

As in Princess House the staff of Cockburn House had little knowledge of the mechanisms of bladder control and the causes of UI in the elderly. Two teaching sessions, developed around the concept of accident, were given to all members of the staff, including the handyman and the cook. Staff were encouraged to ask questions and explanations as the researcher worked alongside staff in the normal daily practices of caring. Working with staff provided an opportunity not only to understand their views and approaches but also to discuss issues and concerns associated with the proposed intervention.

Many staff in residential homes are anxious to stress the social aspects of their work and tend to reject anything reminiscent of a medical or nursing model which is seen to create helplessness and to increase the likelihood of institutionalization. Accordingly, props and aids, such as signs, may be rejected as contributing to institutionally determined behaviour. Staff in Cockburn House, however, were prepared to consider the use of signs to identify the location of toilets as a means of helping orientation in confused residents.

Survey of urinary incontinence

Residents' toileting behaviour was monitored over the period of one week and most residents were shown to be fully continent, with only six residents having a problem associated with UI (Table 19). Most of the expressed concerns were about inappropriate behaviour, and four female residents were selected by the staff to participate in an orientation programme. Each of these residents is considered as a single case study.

TABLE 19: Episodes of urinary incontinence, by number of episodes per patient per day, Cockburn House

Day	Number of Episodes						Total
	0	1	2	3	4	5	
1	27	2	2				6
2	26	3		1			6
3	26	3	1				5
4	26	4					4
5	26	3	1				5
6	26	1	2	1			8
7	26	2	1	1			7
		18	14	9			41

(range 4-8 episodes; average 6)

Single case experimental studies

The objective of the experimental studies was to see whether improvements in the legibility of the environment would aid orientation to place, in particular to the location of the nearest toilet and, as a consequence, lead to a decline in episodes of UI. The intervention was designed to be accessible to care staff and nurses in the belief that "participants should be able to design their own experiments, to step back and reflect on what they see and to sustain a process of enquiry into the surprises and puzzles they discover" (Argyris *et al.*, 1984:394). The intervention was a refinement from an earlier study of ward orientation described by Gilleard *et al.* (1981) in which signs, easily legible to the confused elderly according to a report prepared for the DHSS (1981), outlined

a route between several key locations; the toilet nearest to the resident's bedroom, the dining room and the sitting rooms.

The study was designed as a simple ABA design, where the first phase, A, comprised a series of baseline measurements against which any changes following the application of the intervention, B, could be measured. Ideally the final phase consists of the removal of the intervention to see whether any changes persist, or whether there is a reversal to baseline conditions (A). The single case experimental study differs from the simple pre-test, post-test design by making repeated observations of the behaviour of interest over time, thus creating a time-series of repeated observations (Barlow et al., 1984). The strength of the method rests on these repeated observations of a trend rather than on a single observation at one point in time.

During the study all episodes of UI were recorded for a period of six weeks. Throughout this time each resident was assessed by her key worker and another person (usually the researcher) for the ability to follow the outlined route (Appendix 3). The assessment was made on a three-point scale: can manage alone; requires prompting; and cannot do. Additional information was recorded in the incontinence profile (Appendix 5) along with a record of any prescribed drugs and medications. Each resident was assessed also on her ability to complete the 25-stage sequence of behaviours that constitutes approved social toileting behaviour (Appendix 4). As residents were assessed within the home at regular intervals using the Crichton Behavioural Rating Scale, no further assessment of self-care ability, orientation or confusion was conducted. Instead, the most recent rating, based on an assessment by a key worker over a period of time, is presented. Observations related to episodes of UI were recorded by the care staff on a simple chart. These were collated on a weekly basis and plotted on a graph. At the end of the study an average (mean) of the weekly totals was made for the baseline assessments (A) and for the intervention phase (B). This

allowed an estimate of the degree of variability in the behaviour of interest, its level of occurrence and any apparent trends.

Findings

1. Mrs A., aged 84 years

Mrs A. was almost totally independent in the activities of daily living and was defined by care staff as slightly incontinent of urine. Her sole medication was a diuretic drug (moduretic, one tablet daily). No hearing aid was required, though spectacles were needed. There was no sign of dyspraxia or dysgnosia. On the CRBRS Mrs A. was assessed as occasionally incontinent, with little interest in the environment or in other people, and displaying restless and sometimes agitated behaviour, and also with some difficulty in expression. Orientation to time, place and person was poor. Overall she scored 39 on the CRBRS scale.

Mrs A. was perceived by staff to be incontinent in any area of the house at any time of the day. It was not clear whether an episode of UI increased agitation or whether agitation resulted in UI.

During the week of the baseline assessment Mrs A. had seven episodes of UI (one daily) at times ranging from 10 a.m. (two episodes) to 7 to 8 p.m. (two episodes). On assessment Mrs A. was found to be well oriented to the home and able at all times to find her own way and to take her key worker on the orientation walk. Apart from hand washing, she was able also to complete the fairly complex procedure of 25 steps associated with appropriate toileting during the four weeks of the investigation. During the four weeks of the study, no episodes of UI were noted.

Midway through the study the following observation was recorded by Mrs A.'s key worker:

E. has had no problem finding the toilet nearest to her bedroom, then bedroom to sitting room. She did turn the wrong way when looking for the toilet but realised this and corrected it herself. Everything else she did without prompting. This was done when she was relaxed and very calm which otherwise might have given a different response.

(key worker)

These findings suggest that Mrs A.'s UI was a result, rather than the source, of her agitation. Following the study, Mrs A.'s key worker went on to see whether or not there was a relationship between episodes of agitation and UI. This relationship was later confirmed and staff went on to reframe the problem in terms of decreasing agitation.

2. Miss Mac, aged 80

Miss Mac required only modest help to dress if her clothes were laid out. She could stand and walk unaided, required no hearing aid, but spectacles were worn. Assessment by staff during baseline observations showed no evidence of dyspraxia or dysgnosia. Little interest was shown in the environment or in other residents, and her speech was poor. Miss Mac's main problems were associated with continence, orientation and certain social behaviours. Overall rating on the CRBRS was 34, suggesting moderate impairment.

For no obvious reason Miss Mac had greater difficulty in orientation on some days compared to others. For example:

15/8 Could not find her way and I had to show her that she could go out of the front door and around to the verandah. (key worker)

15/9 Lost her way to dining room this morning up at bedroom end. Directed her by way of signs. (key worker)

Miss Mac was defined by the staff as frequently UI (three times daily), though in the baseline assessment only 12 episodes were recorded in all. Assessment of orientation and of self-toileting ability showed Miss Mac's problems to be related not only to a

failure of orientation but also to an inability to manage her underclothes, and possibly to a form of urgency. Over the following weeks, 13, 10, 11, and finally 8 episodes of UI were noted. The slight reduction in episodes of UI could not be attributed to improvement in the legibility of the environment and was more likely to be associated with increased awareness on the part of the staff. But the recorded observations showed Miss Mac's problems as identified by staff was a habit of changing soiled underclothes which she then replaced in the chest of drawers. It became evident also that Miss Mac used a waste bucket during the night as a receptacle for urine.

These observations which suggested that Miss Mac was having problems not only with the legibility of her environment but also was encountering problems in manipulating her clothing was confirmed by means of the self-toileting assessment. But, by using the wastepaper basket, Miss Mac showed how even a confused person could act to adapt her environment. Clearly Miss Mac would benefit from a commode near her bed during the night, and it was suggested that the use of tights be discontinued as these appeared to contribute to the problem. It was also suggested that the community nursing services be approached for a suitable incontinence aid, such as Kanga pants.

3. Mrs. F., aged 82

Mrs F. was extremely frail and needed maximum assistance to wash and dress. She was very breathless on any kind of exertion, more so in the morning, when she needed assistance to walk, than in the afternoon. She showed no interest in the environment or in her surroundings and was inclined to sit with her eyes closed. Staff felt Mrs F.'s condition, which was associated with a cardiac condition, to be deteriorating. Mrs F. showed signs of dysgnosia, sometimes forgetting what to do with simple, everyday objects. Her overall score on the CRBRS was fairly low, around 26.

Mrs F. was seen by staff to be incontinent, mainly during the night, with only occasional episodes by day. During the week of the baseline assessment Mrs F. had 12 episodes of UI by day and 10 episodes by night. During the first week of the study 13 episodes were noted by day and again 10 by night. However, one week into the study, after staff had become increasingly concerned at Mrs F's breathlessness, a diuretic drug to reduce oedema was prescribed. The episodes of UI doubled. During the second, third and fourth weeks of the study episodes of daytime UI increased to 22, 23 and 22 episodes per week by day, and to 13, 25 and 19 episodes by night.

Though Mrs F. appeared to recognise the urge to use the toilet, struggling to her feet, prompting was needed to remind her of the direction to take, and she needed assistance to manipulate clothing. In the assessment of orientation it was noted that:

Mrs F. is very breathless on exertion and cannot manage a whole guided tour. If the toilet door is open, she can recognise the toilet. (key worker)

As the staff had access neither to incontinence pads nor to a commode, Mrs F.'s problems were centred on an increased use of the toilet by day which she could find only with assistance. Her problems were associated not only with the clarity and ease of finding her way around the home (the legibility of the environment), but also with the problems she encountered due to her physical condition. The demands created by an environment that was not suited to a very dyspnoeic person shown in the recorded comments by the key worker: "The distances were simply too great for Mrs. F. to manage with ease".

A major conflict (or asynchrony) was related to the timing of the administration of the diuretic drug which was given in the evening in an attempt to lessen the breathlessness of the morning. A bedside commode might have helped to encourage regular toileting by night, and during the day the use of a wheelchair would have served to lessen the problem of distance to the nearest toilet. In either

case Mrs F. required readily available help when this was needed. Two weeks after the study Mrs F. was admitted to hospital.

4. Mrs D., aged 79

Mrs D. needed assistance with washing and dressing. She had badly deformed feet which restricted mobility severely. Though she showed little interest in the environment, she displayed great affection for the care workers and was often seen to hug them. Hearing appeared to be satisfactory and she had no spectacles. However, she spoke very rarely though, when agitated, particularly when incontinent, tears rolled down her cheeks. Mrs D.'s overall score on the CRBRS was only 30.

Assessed by the care workers as frequently UI by night and occasionally by day, the baseline assessment showed Mrs D. to have had seven episodes by day and three by night over one week.

In the observations Mrs D.'s care worker had noted, 'never uses the toilet by day'. Here the recorded observations of toilet use are of interest for Mrs D. was never UI nor used the toilet more than three times in any 24-hour period. Over the four weeks of the study neither the daytime nor night-time UI showed much change. Mrs D. might have benefited from a more exhaustive clinical assessment though this would have presented difficulty due to her confusion.

Summary

Levels of daytime UI were collated on a weekly basis and are shown in Figure 11. To understand these findings, however, it is important to recognise the differences between residents as well as their similarities. Differences existed in the extent of help needed with the simple activities of daily living and in the extent of confusion as measured by the Crichton Behavioural Rating Scale. But even this form of assessment was of limited value in assessing

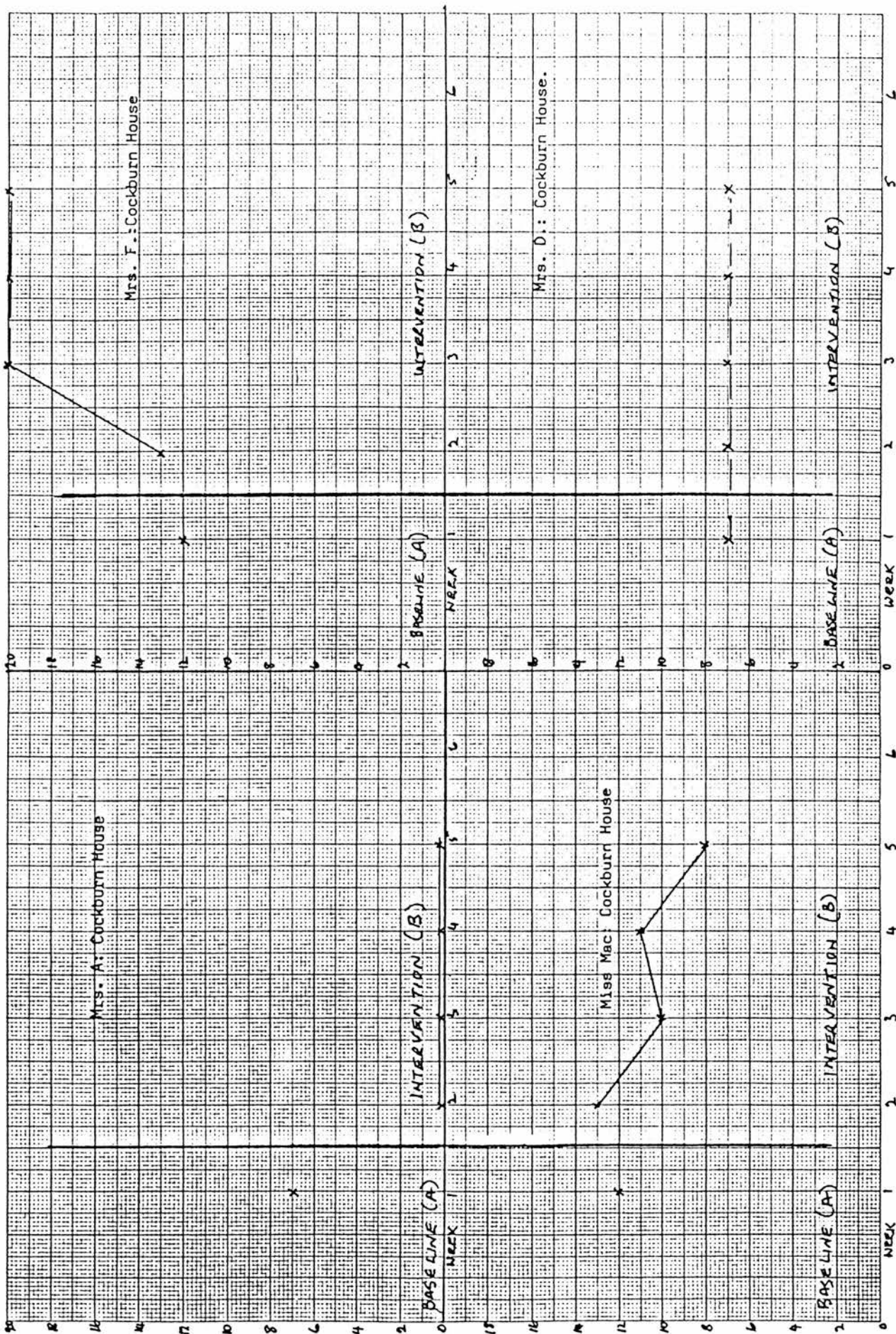


FIGURE 11: Average number of episodes of urinary incontinence in four cases during baseline (A) and intervention (B) conducted in a residential home.

the ability of a resident to decipher the environment. This is a difficult area. Even more striking was the limited mobility that affected two residents. In the light of these differences, it is not altogether surprising that simply attempting to increase the legibility of the environment was of limited usefulness. Only one of the four residents was able herself to use the signs as an aid to orientation. Changes in the levels of UI were attributed to (i) changes in medication for one resident, and (ii) increased awareness on the part of the care staff who found the charts to assess self-toileting ability useful as a means of identifying specific difficulties like the manipulation of underclothes, for example. As the signs were found by staff to be helpful in directing other residents to the nearest toilet, and as the findings of the study were largely negative, the planned reversal to the baseline conditions was abandoned.

It became evident in the course of the study that, though the signs were clear and legible to members of staff and were easily seen, even from a distance, residents did not seem able to focus on a sign until these were very close. Several residents, those involved in the study as well as some of those not directly involved, approached the signs, spelling out letters verbally and by touch. This suggests that the ability to process visual information may be diminished in the cognitively impaired person, though at what point in the process this ability begins to disintegrate is not clear. Recognising this lost ability, staff began to interpret the signs for residents, using these as a guide to the nearest toilet, "Follow the red sign that says toilet" appeared to be helpful to the residents unable to find their way by other means. The use of signs alone appeared to be insufficient to affect behaviour, and the presence of a willing helper who understood the nature of the problems seemed to be needed.

Though the residential home was a good example of a prosthetic environment, poor communication between staff in the home and the

various general practitioners was problematic. As few of the residents had physical problems of the kind commonly found in residential homes, leg ulcers for example, district nurses were felt to give a low priority to the needs of the residents. The city in which the home was situated had neither a centralised depot from which equipment could be borrowed or hired, nor any agreed method of distributing incontinence aids. This is an area of policy to which attention should be directed. In addition, those members of staff who had previously worked in large psychiatric institutions showed a distrust of the use of incontinence pads, believing that these encouraged 'wetting behaviour' through apathy. More education in the appropriate use of appropriate aids is required, particularly for staff in the residential and voluntary sector.

Ward C

The final case study was carried out in a 30-bedded male ward in a psychiatric hospital situated in a rural/mining area. Gaining access to the site required extensive negotiation and 'trade-offs' that included teaching sessions about UI in the elderly for staff within the hospital. When two new charge nurses with an interest in, and a commitment to, change were appointed to one ward, nursing management and medical staff were supportive of an action-research approach to a change in the orientation to, and environment of, care.

Insights developed in the earlier studies were carried into the final study. These included:

What would happen if some form of key worker/primary nursing system was introduced?

Could the environment be adapted to encourage and facilitate new forms of behaviour?

Could a nursing intervention be structured around the tacit knowledge displayed in the language used by nurses?

The linkages between the preliminary studies and the final study are shown below.

Preliminary studies revealed	Main study tested
I. poor interaction between patient and nurse →	adapting the environment
II. 'remind him to go' →	prompted voiding
III. key worker system →	changing the organisation of organisation: encouraging primary nursing

Environment of care

The ward was situated at the far end of the hospital from the principal administration block and consisted of a T-shaped building (Figure 12). The kitchen, domestic offices, patient clothing store and staff cloakroom were separated from the ward proper, which was, in effect, a large rectangular room with locked doors at each end. Beyond the main rectangle, and attached by a short corridor, lay a small annexe. In the main dormitory area were two rows of 11 beds, each with a personal locker. A bathroom led off the bottom right-hand corner, and at the top right-hand corner lay the toilets which were linked through a door to the day area. The main access to the day area was through the locked doors, and a dining area abutted one side with five tables, each for four persons. The day area was partitioned by a 'room divider' which created a corridor through the ward to the nurses' office and the annexe. In the area created by the room divider, seats and a television set were ranged against the walls, and from this area a door led to the urinals and toilets.

The small additional wing, attached to the ward by a short corridor, was also a rectangle which contained a day area separated by a room divider from eight beds and lockers. At the top of this rectangle, a room contained three toilets and washbasins, each separated by a shower curtain. At the beginning of the study, this

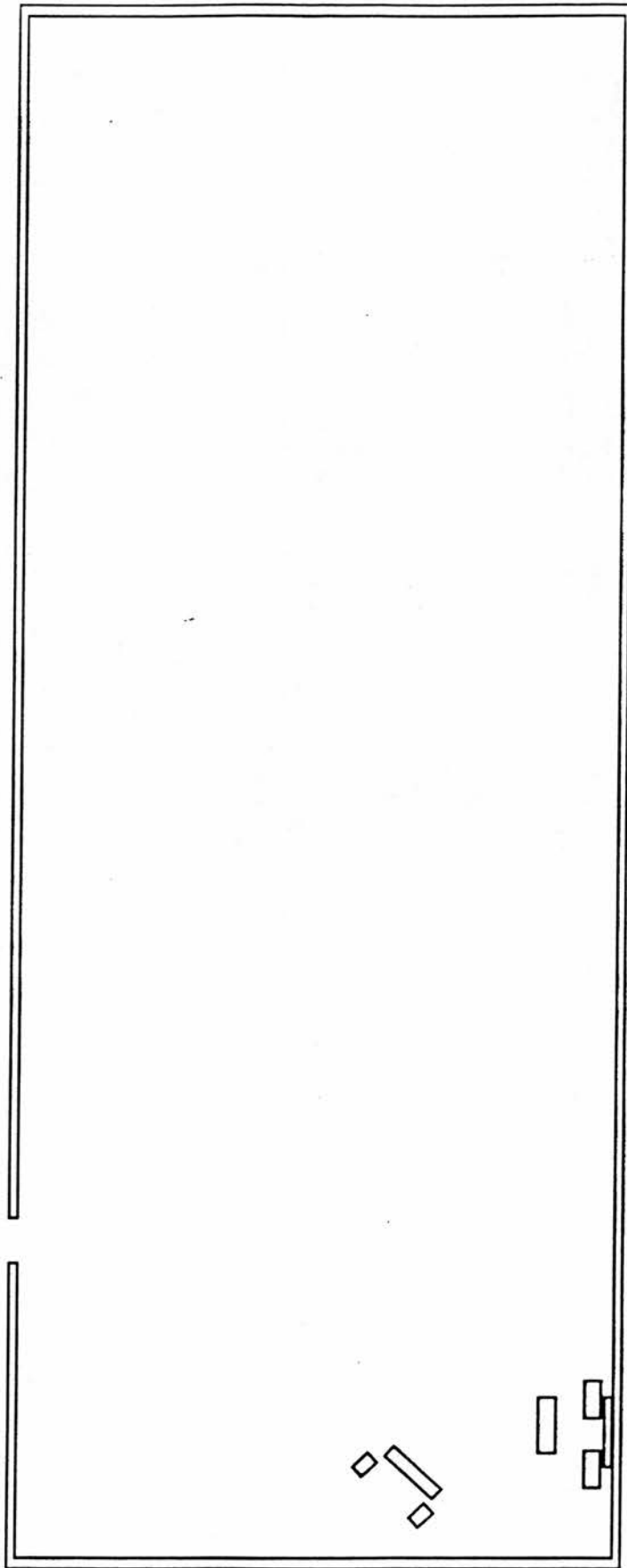


FIGURE 12: Representation of ward layout: showing rearranged furniture

MAIN WARD

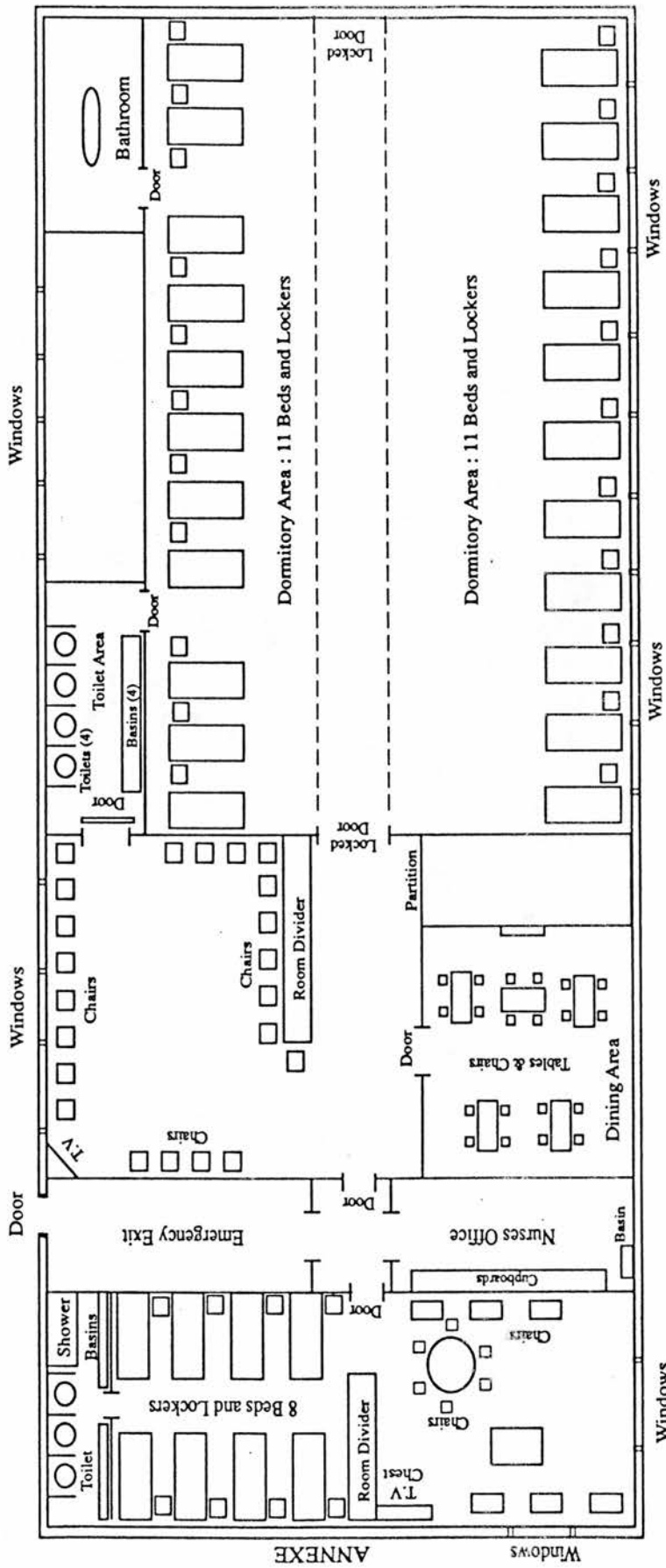


FIGURE 12: Representation of ward layout

area was reserved for the eight most self-caring men who needed least attention from the nursing staff.

The ward and its staff shared some of the characteristics of Ward B and gave an initial impression of a back ward with little evidence of sensory stimulation nor of an environment to facilitate orientation. There was little privacy, even in the showers and toilets separated only by a shower curtain. Personalisation of clothes and ownership of space was minimal, serving to reduce the ability of an individual to exercise control over even minor events. Whereas in the female wards a handbag could be used to retain a sense of identity, it was difficult to see how the men could achieve this. In fact, two men wore cloth caps which were rarely removed, and one carried a newspaper at all times even though this was often in tatters and never read.

The patients' day

Thirty men, 22 in the main part and eight in the annexe, lived in the ward. Several patients were graduates of the institution; others suffered from behavioural problems and a few were diagnosed as suffering from one of the dementias. More than one third of the men had fairly extensive physical limitations and one amputee was confined to a wheelchair. Five men had limited mobility and required the assistance of a nurse to transfer between locations and a further six men needed help from two nurses. The remainder needed help and supervision with the activities of daily living. As in the psychiatric wards discussed in the earlier preliminary studies, patients tended to be herded and crammed into a particular setting - the day area, the dining area or the toilets - where interaction between individual and nurse was short, purposive and related mainly to physical care.

The patients' day was organised around eating, eliminating and sleeping. Few patients were seen to interact in any meaningful way with their environment: there were few newspapers and the television

set, though switched on, was rarely watched. Diversional therapists came once, occasionally twice, per week, introducing some simple crafts and maintaining 'reality orientation' for the 'better patients'. The apathetic patients sat and endured the day, neither engaged in any activity nor interacting with other patients or staff.

Those patients who had been in the hospital for several years had few visitors though the more recent admissions were visited by family and friends. During the period of the study several patients and staff went on shopping expeditions and on a visit to Cockburn House and to another psychiatric hospital in an other area. Opportunities were taken during these outings to have a bar-lunch or coffee and to awaken the mens' interests.

The nurses' perspective

Nursing care was delivered to these men by a team of nursing staff led by two male charge nurses (one of whom had recent experience of a unit for elderly, mentally frail patients in the South of England, and who was completing a day-release course on ward management) plus two recently qualified staff nurses. Neither the charge nurses nor staff nurses had completed the course on care of the elderly. The remainder of the nursing staff comprised eight nursing assistants, three male and five female, some of whom had several years' experience in the hospital and had a longstanding association with the hospital through family members. A minority (one male, two female) were associated with a year-long job creation scheme to gain work experience, and had come to the hospital more or less straight from school. At most, these younger members had a few days' induction training and skills were learned 'on the job'. Staff of all grades were released to attend in-service lectures which took place on a monthly basis, though these were taken up mostly by the qualified staff.

As in the preliminary studies, the nurses' day was organised around segments of behaviour created by the portering and domestic staff. Each sharp burst of activity that surrounded a meal was

followed, more or less, by a toileting round of those patients perceived by staff to need help. The sequence tended to break down in the evening and as patients were gradually put to bed. Once in bed, night staff practices took over: some nights patients known to be incontinent overnight had external collecting devices attached, while on others night incontinence pads and net pants were used. In these circumstances nurse-patient interactions were minimal.

Though an understanding of the nature of changes associated with a dementing illness was superficial in most of the staff, as in other NHS settings, qualified staff were more likely to see patients' problems as complex. Qualified staff admitted more often to finding the work stressful, particularly the need to reconcile conflicting demands for care. They wished to give greater psychological support to these elderly men but were constrained by the extend of demands for physical care and the lack of time to move beyond basic care. Most of the staff knew at least the principles underlying reality orientation though many were sceptical of its value. The stark environment and the lack of resources, particularly in relation to UI aids, were of concern to one charge nurse especially who fought hard to get better equipment. In contrast, nursing assistants found satisfaction in working as a team and welcomed a strong routine of daily tasks that imposed order.

You have to have a routine else they [the patients] would run all over you. They know you're new and a soft mark. They'll run you off your feet, but you'll learn. (male nursing assistant)

For all staff, the worst aspect of their job was the death of a patient who had been in the hospital, often for several years.

Nursing assistants defined nursing skill in terms of technical procedures and medicines. Along with the organisation of the working day, these were seen as the province of the qualified nurses. One of the new staff nurses was not very good at organising the work and was actively criticised by a nursing assistant as 'not pulling his weight. He takes far too long to give out the medicines and

leaves us to get on with the toileting'. In fact, this nurse took pains to make sure that the medicines were swallowed and that sufficient fluid was taken.

Throughout the hospital, attempts were being made to develop individualised, patient-centred plans of nursing care, but these were not sufficiently developed to be of any use at the beginning of the study. But by the time the study had ended, a nursing assessment, including an assessment of toileting behaviour and continence, was recorded and a plan of nursing care outlined.

Toileting

Four or five routine toileting rounds were carried out each day. Those patients who could manage alone were free to do so, but most patients were taken by one, or sometimes two, nurse(s) to the toilet. Only one small sign with the word TOILET spelled out in black letters on a metallic ground indicated the location of the toilet, but since this was at the top of the day area, and as the door was always open, perhaps the staff felt a sign to be redundant. One man was known to urinate in an inappropriate place, usually behind the dining room door, behind a radiator in the short corridor between the annexe and the main ward, or in someone's bed.

Urinary incontinence

During the settling in period different aspects of UI were discussed formally and informally with groups of staff and with individuals. Some of the nursing assistants were quite sure that urinating in an inappropriate place was not incontinence. These patients simply "couldn't find the way" (nursing assistant). And, as in other wards and homes, UI was associated with, and defined by, wet clothes. Having sufficient clean clothes was second only to needing more staff as the main need felt by nursing assistants. Trained staff were concerned with the poor quality of the incontinence aids, particularly the pads and the penile sheaths. As

in Ward B, these aids did little to protect the men's clothing from becoming wet and soiled, and there was ever a temptation to resort to communal clothing, a serious contradiction to the individualised approach to care espoused by nursing. But the wardrobe mistress, a specially appointed domestic worker, took pride in building up a wardrobe for each man, using the newly released Incapax funds.

Survey of urinary incontinence

The staff agreed to carry out a survey of urinary incontinence over one week (Table 20). On being thanked for undertaking this extra work, one nursing assistant remarked that the exercise had been useful as "it let you see who had been done", which suggests that, on occasions, some patients' toileting needs were overlooked.

TABLE 20: Episodes of urinary incontinence, by number of episodes per patient per day, Ward C

Day	Number of Episodes						Total
	0	1	2	3	4	5	
1	14	1	4	2	7		43
2	11	3	3	6	5		47
3	12	5	2	7	2		38
4	9	6	5	3	3	2	47
5	10	5	3	6	2	2	47
6	10	5	4	2	4	3	50
7	12	3	3	7	3		42
		28	48	99	104	35	314

(range 38-50 episodes; average 45)

Over one week, 314 episodes of UI were recorded. Of the 30 men, only four were completely continent; nine men (30%) had between one and five episodes, and a further three men (10%) had between six and ten episodes. At the other end of the scale, three men (10%) had between 21 and 25 episodes of UI during the week, while another two men had more than 26 episodes. In the middle range, four men (13%) had between 11 and 15 episodes and another five (17%) had between 16 and 20 episodes. The problem of UI was concentrated in less than half of the ward population. Those men experiencing three or more episodes of UI daily accounted for 76% of all the episodes in the ward.

Single case experimental studies

The objective of the experimental studies was to see whether prompted voiding by nurses, in effect 'reminding' the patient of the need to use the toilet in a systematic way, would lead to an increased correct use of the toilet and a consequent decrease in episodes of wetness or UI. Once again the intervention was designed to be readily accessible to staff in the ward. According to Creason *et al.* (1989), prompted voiding was included within the rubric of behaviour therapy by a National Workshop sponsored by the American Institute of Aging. "Prompted voiding' involves asking patients at regular intervals if they need to void and, if so, they are helped to void" (Creason *et al.*, 1989:121).

In addition to asking patients if they wished to use the toilet, the intervention B included the offer of a drink. During the preliminary studies concern had been felt at the very low level of fluid received by some patients in the NHS wards. It was not uncommon to see patients having an estimated daily fluid intake of considerably less than 1000 ml. While there are no guidelines in the literature related to fluid intake in the elderly - available guidelines are directed to patients with an indwelling catheter - given that sensory loss has been estimated to be around 500 ml daily

(personal communication, G. Bryden), little fluid seemed to be available for normal hydration.

The study was designed as a simple ABA design where the first phase, A, comprised a series of baseline measurements. In terms of UI episodes, the aim was to see whether a stable trend in episodes of UI emerged from observations of UI collated on a weekly basis. If stable, this level formed the baseline against which any future upward or downward trends could be measured. In the second phase, B, when the intervention was introduced, measurements of the behaviour of interest was continued.

During the study, episodes of UI were recorded over a period of eight weeks. The first two weeks established the baseline, and if this was similar to the level indicated in the ward survey carried out two weeks earlier, the trend was considered stable. In the second phase, B, following the introduction of the intervention, measurements continued, and again were collated on a weekly basis.

Four men were selected by the ward staff from those patients who fell within the middle range of 11-20 episodes of UI during the week of the ward survey. Other criteria for admission included ability to walk even with assistance of one nurse; neither blind nor deaf, and with residence in the ward of at least six months and seen by staff to be 'confused'. All four men selected for the study lived in the main ward area. To facilitate the study, these men were transferred to the annexe alongside four relatively self-caring men. This change of location provided an opportunity of employing the principles of action research and studying the effects of changing the environment of care. A nursing assistant (one of three) was detailed to assist the researcher in the delivery of all nursing care during a shift (7.30 a.m.-3.30 p.m., or 1.30 p.m.-9.30 p.m.: most of the shifts worked by the researcher were from 7.30 a.m.-3.30 p.m.). In effect, a group of eight patients was cared for by two nurses over a period of time. One of these nurses was responsible and accountable for the planning and delivery of nursing care, creating in

effect a primary nursing group (Appendix 9). Further details of these changes are given below (pp.223 -228).

Though four men were selected to take part in the study, data related to only three cases are presented. During the early stages of the study, one man developed a severe chest infection which necessitated bed rest and was not able to continue in the study.

During the first week of the study, patients' self-care ability was measured using the Barthel Index (Appendix 1). Memory - confusion and concentration - was assessed by means of the index developed by Blessed (Appendix 2). and an incontinence profile was completed (Appendix 5). During the study each episode of UI was recorded and each episode of correct toilet use. In addition, daily fluid intake was recorded. Patterns of episodes of UI and of correct toilet use for each case are shown in Figure 13.

Findings

1. Mr J.B., aged 88 years

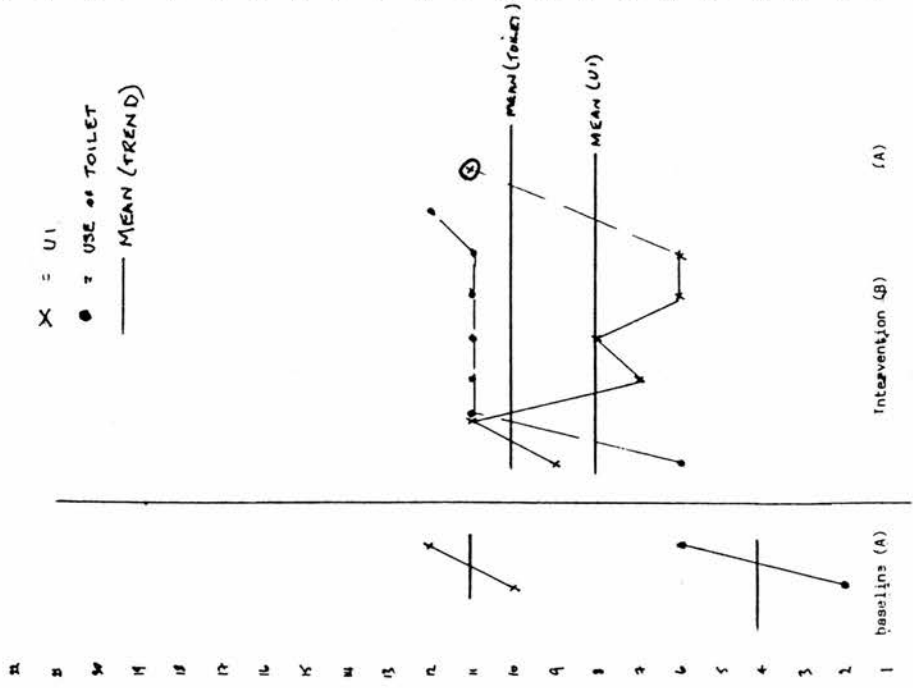
Mr B. scored 30 on the Barthel Index, a score that reflected a high level of dependency. He could eat without help, but required assistance to wash and dress. Help was needed to walk and to transfer, and he had some moderate hearing loss but could understand and respond to simple phrases spoken clearly. Information recall, memory and concentration, as measured on the Blessed scale, was only 10 of a possible 36. The only drug prescribed for Mr B. was moduretic, a potassium sparing diuretic. He was incontinent of urine and occasionally of faeces. Most episodes of UI required a change of clothes.

The baseline figure of 15 showed no change from the figure established in the earlier survey and was considered stable. During the intervention, fluid intake rose from 600-900 ml daily to 1500 ml. A downward trend in episodes of UI from an average of 15 to an

Mr. I.K.: Ward C

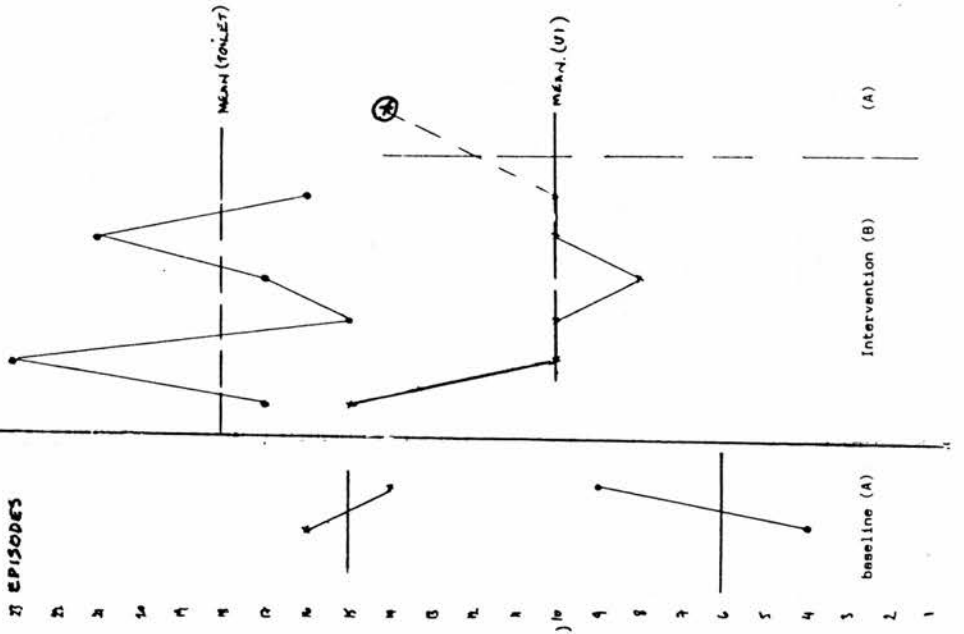
8 EPISODES

X = UI
 ● = USE OF TOILET
 — = MEAN (TREND)



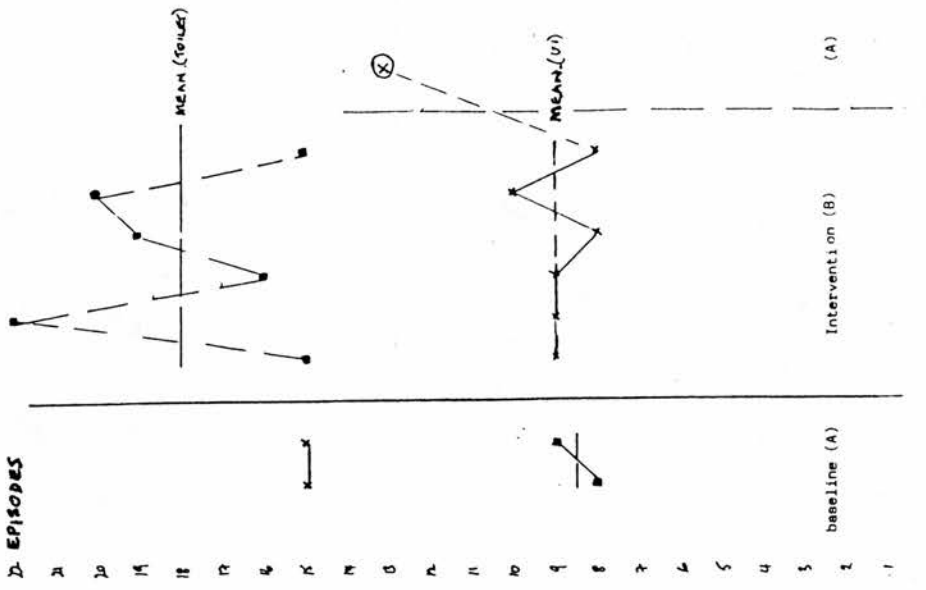
Mr. R.J.: Ward C

11 EPISODES



Mr. R.B.: Ward C

12 EPISODES



week

FIGURE 13: Average number of episodes of urinary incontinence and correct toilet use in three cases during baseline (A) and intervention (B) conducted in a psychogeriatric ward.

average of nine episodes can be seen. This was matched by an increased use of the toilet from an average of nine times per week to an average of 18 times. Unexpectedly, Mr B.'s mobility also improved sufficiently to be able to stand using a walking frame for support. Interactions with the nurses also increased and it was considered he was sleeping less.

2. Mr R.J., aged 79 years

Mr J. scored 30 on the Barthel Index and was considered to be heavily dependent. He was diagnosed as a possible paraphrenia and also was a diet-controlled, late onset diabetic. Help was needed in washing and dressing as well as with walking. His gait was ataxic. But Mr J.'s problems were behavioural: he grabbed the food from the plates of other patients and was generally very disruptive at meal times. He could also be very violent and aggressive. Assessment of information-memory-concentration, as measured on the Blessed scale, was 17: concentration was particularly poor. Mr J. was prescribed a tranquilliser (Haloperidol) as well as a night sedative (Temazepam).

The baseline level of UI was considered stable at an average of 14 episodes per week with correct toilet use at an average of eight times per week. During the intervention, fluid intake rose to almost 2000 daily from less than 1000 ml. After the first week of the intervention, when episodes of UI numbered 15, those fell and appeared stable around 10. Correct toilet use increased commensurately rising to over 20 but with a trend around 15-16 episodes.

In addition to improvements in levels of UI, towards the end of the study Mr J. asked spontaneously to be taken to the toilet on several occasions. In contrast to his usual and daily disruptive eating behaviour, only two aggressive outbursts were recorded.

3. Mr I.K. aged 85 years

Mr K. scored 30 on the Barthel Index. He was seen by staff to be very dependent in the activities of daily living, requiring help with washing, dressing and with walking. He suffered from Parkinson's disease and agitation and from hypertension. Drugs prescribed included thyroxine, procycline, promaline, and for an irritable bowel, imodium and fybogel. On occasion salivation was excessive. On the information-memory-concentration test Mr K. scored 12 and was believed by staff to be very disoriented to time, place and person.

The baseline studies showed the level of UI to be stable around 10-12 episodes per week. During the intervention, fluid intake rose from 600 ml to 1500 ml on average; urinary episodes of UI decreased, showing a downward trend to between six and seven episodes; correct toilet use from four to six to more than ten.

Mr K. showed a much less agitated behaviour and could interact with the nurses, telling them about places where he had lived and how he had played cricket. In the view of his sister his conversations were improved. His mobility also improved sufficiently for Mr K. to walk with a 'gutter zimmer' unaided but supervised.

Summary

The studies ended for ^{two} three reasons. The charge nurse had been successful in obtaining agreement from the pharmacy and from management to evaluate a new incontinence pad and staff would be required to collect data about these aids. Secondly, medical staff transferred some patients to another ward and admitted some new patients whom they wished to be cared for in the annexe with the same degree of direct nursing care and assessment and rehabilitation that characterised the study. The four men were returned to the main ward where routine care prevailed, though this was being addressed by

trying to create a system of nursing teams under the guidance of a particular registered nurse.

All three men were found to have similar levels of self-care deficits as measured by the Barthel Index and all scored badly in terms of memory, recall and information-processing as measured by the Blessed score. All of them were on a variety of drugs. Initially, levels of UI ranged from 10-16 episodes per week, and these fell to between six and ten episodes per week, a fall of between 27 and 40%. Similarly, the correct use of the toilet increased from between four to eight times per week to between ten to 18 times. Staff saw this as being an important point, signifying a marked decrease in the need to change wet clothes.

Fluid intake was also increased and may have contributed to the increased use of the toilet. During the first two weeks of the study a very sharp increase in toilet use was seen in two men. In the third man (I.K.), who suffered from Parkinsonism which is now known to be associated with a bladder dyssynergis (Eastwood et al., 1979), episodes of UI increased in the first week of the study. This is an area where more study is needed. A carefully controlled physiological study, looking at various parameters and employing selected and careful staff, could provide some very interesting information in this little understood area.

Action Research

Experience and insights gained in the preliminary studies were convincing evidence of the need to change from what Evers (1981) terms a warehousing approach to one that took account of individual needs. But initiating change is not easy: in a classic study (Lippett et al., 1958:58) suggests five strategies to implement change:

mediating and developing new connections within the host system, for example, by networking with other institutions

presenting knowledge not otherwise readily available to the host group

providing support from within through involvement in the host group in helping to meet special needs

creating a special environment conducive to learning

giving support during the process of change

When permission was given for entry to the ward, the first week was spent in becoming familiar with the ward, its staff and patients. Questions about the study were encouraged while the researcher worked with staff in their daily routine. The extensive negotiations for entry to the ward had revealed a shared perspective on many of the shortcomings in the quality of care for the elderly which was shared by the nursing management who were extremely supportive. When issues or practices were not clear, one of the charge nurses, or a nursing assistant who was especially interested, was approached for clarification, becoming in effect a key informant of the customs and ways of the ward.

Field notes recorded in the early days revealed anxieties:

I don't know where to begin. The noise and commotion were terrible, incredible. How do staff cope day in and day out? One man scattered all the food off his plate then grabbed the food from the others. Food was all over the place. It was thrown, spat, and rammed down. One man fell to his knees and crawled across the floor. Another choked on a sausage and that caused panic. Discussed later with staff and was told they had requested a better suction machine! Surely this is a reaction. The staff must know which patients are likely to choke. Do they assess eating skills etc.? Must explore this. (Field notes)

The anxieties were felt also by the ward staff. Many questions were about research. What was it? Why? Most of the staff felt they knew nothing about research and had never been involved with any kind of research project. Patient questions and answers revealed that most people had at least filled in a questionnaire or had taken part in a survey. Qualified staff had collected specimens or other kinds of data for medical research. But nursing research of this kind was unknown, and it was important to allay fears that this was not an exercise in time and motion, or an exercise designed to demonstrate that fewer nurses would be needed.

Mediating and developing new networks

In the discussions that followed in the next weeks, the experience of working in other settings was shared with staff, and it was agreed that a visit to other settings should be arranged. Later, staff and patients from Ward C visited Cockburn House and another hospital where innovations had taken place (Watson and Anderson, 1987). From these meetings and discussions it was agreed that some way of breaking up the mass of patients into smaller groups should be tried. Nursing assistants refused to sit down with patients during meals, but the principle was established that patients who had a propensity to choke would be assessed for eating skills and seated where better supervision could be provided. Nursing assistants were encouraged to look for information on feeding patients with eating difficulties, and a handbook, Goal Planning with Elderly People (Barraclough and Fleming, 1986) was made available for the staff. The principles underlying a primary nursing approach were outlined for the staff and a short handout written and distributed (Appendix 10). Subsequently patients who were messy eaters or had difficulties were seated at one table in the dining area where one nurse could provide better supervision. Slowly staff were encouraged to reframe a problem in a nursing perspective and to see themselves as managing the interaction between person and environment.

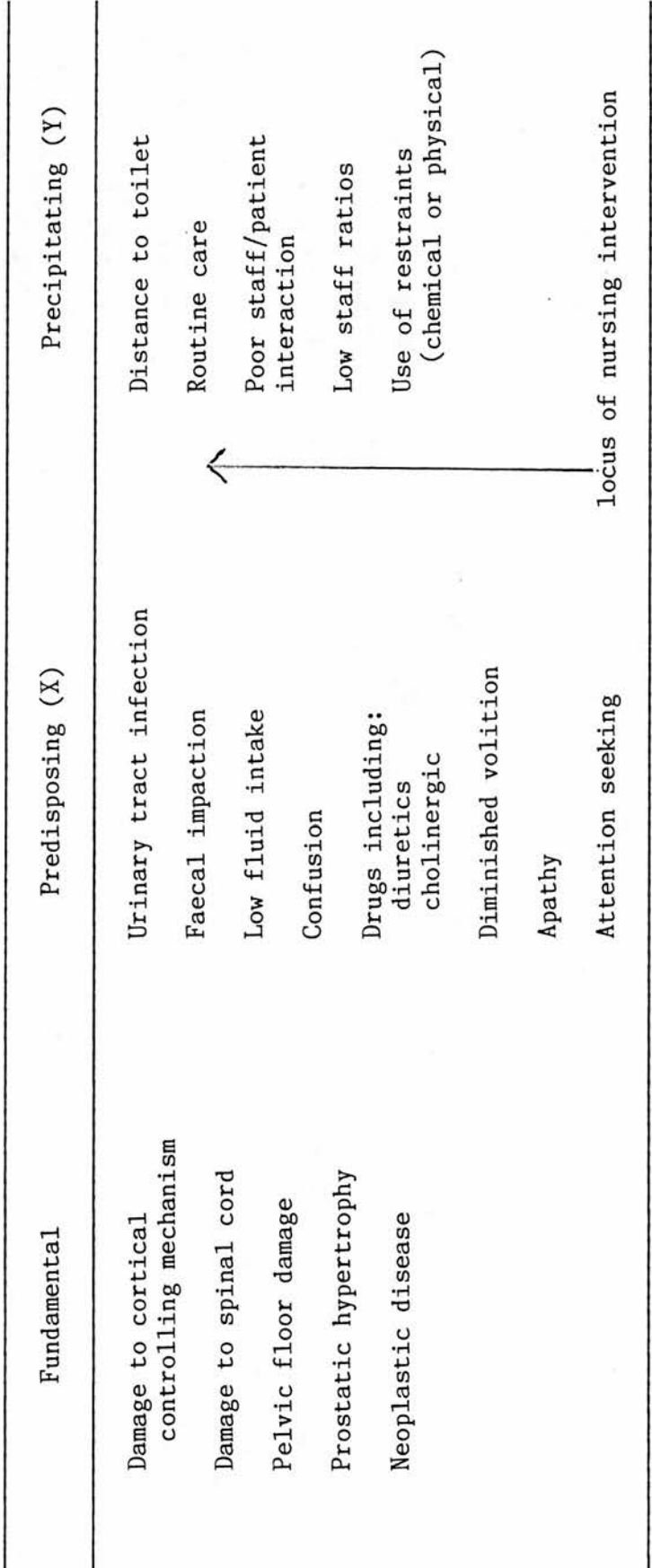
Reframing the problem through sharing knowledge not otherwise available

Problems associated with UI were identified in the preliminary studies as associated with a routine and task-oriented approach to care. It was logical therefore to reframe problems in terms of nursing interventions, systematically planned and evaluated, trying to develop an integrated and less fragmented pattern of practice, using the concept of accident (Figure 14), the locus of the nursing intervention was identified as the interface between predisposing and precipitating factors which is the point at which the nurse can mediate the person/environment interaction.

Adapting the physical environment: creating a special environment conducive to learning

As noted earlier the environment lacked sensory stimulation and comfort. It was an unexpected bonus therefore that new Parker Knoll suites were allocated to the ward and placed in the annexe. An electric fire and surround (without elements) was also found and placed on one wall. This allowed the space to be used in different ways. Firstly, one group of four patients were seated around the fireplace, while another group of four were ringed round the television set, which was now within a comfortable distance from the viewer, or looked out of a window. Whenever not engaged in some duty, the researcher or assistant sat with each group, trying to engage the patients in conversation. It was not, however, easy to maintain the different groupings and for several weeks the chairs and settees had to be moved again and again into the floor space from the periphery preferred by the domestic staff.

Trying to get these apathetic men to respond seemed at first impossible and it was by chance that a strategy was found to help. One day, while playing with a beach ball, tossing it to patients seated in a ring, a question concerning a place name beginning with the letter A was asked. The patient who was holding the ball



(Probability of episode of UI is greater at the interface between X and Y)

FIGURE 14: Concept of accident as related to urinary incontinence showing locus of nursing intervention

responded. The tactic was tried with success in other patients. Engaging physical attention appeared to help concentration and memory recall in around half of the group.

Another unexpected consequence was the attraction the annexe developed, not only for other staff, many of whom came in to sit with patients and play dominoes or chat during a quiet spell, but for other patients as well. Some days the annexe was in danger of becoming as crammed as the day area! The smaller groupings, sometimes around a table, sometimes reading the headlines from the paper, seemed to have a calming effect. By the end of the study there was less disruptive behaviour. Nursing and medical staff agreed that the patients looked more comfortable and at ease.

Primary nursing: giving support during the process of change

Changing the organisation of nursing care by limiting the number of nurses interacting with, and tending to, a small group of patients changed the interaction between person and environment. This created less fragmented care, but also increased the interactions between nurse and patient because fewer nurses were more readily available.

With the smaller groupings, nurse-patient interactions, both verbal and tactile, increased though there was little observed change in patient-nurse interaction. Almost always interactions were initiated by a nurse. Though the term 'key worker' or 'primary nurse' was not used, it was agreed by the ward staff that different groupings of patients was successful and in time other groups under the care of a specified nurse or nursing assistants developed, one in the main day area and one in the dining area. Subsequently, one of the nursing assistants was released to become the coordinator of diversional activities for the three groups.

Together these strategies provided support for the charge nurses who wished to initiate change through involvement of the researcher in the host group in helping to meet special needs.

Summary of the Main Studies

Attempts to improve the legibility of an already prosthetic environment through signposting showed that UI could be attributed to inability to locate the toilet in only one of four cases. For the one resident who found difficulty in making sense of her environment, a greater problem for the staff was related to antisocial behaviour. In another resident, physical deterioration associated with congestive cardiac failure required the use of a diuretic drug which led, in turn, to a sharp increase in the number of episodes of UI. Care staff had a limited knowledge of the effect of drugs in general and of diuretic drugs in particular. At the risk of 'medicalising' what is seen as social care, staff in residential homes should be made aware of the effect of 'water pills', particularly of the average length of time between ingestion and increased urinary output.

Cockburn House and Ward C revealed many of the differences shown in the preliminary studies. In the residential home residents' self-care abilities were more intact: they lived in an environment with more space, greater privacy and greater comfort. The environment was prosthetic, stimulating and supportive of their needs both physically and psychologically. They also had more prolonged interactions with their carers which were less likely to be confined solely to aspects of physical care. Far fewer residents had a problem associated with UI, which was perhaps a reflection of their admission and screening policy. Before admission, staff in the home were allowed to assess residents' ability and capacity to integrate with others in the home. Integration was central to the explicit philosophy of care which was adopted and practised by all staff. The integrated pattern of care that prevailed enjoined the interest and imagination of the care staff who were encouraged to reframe residents' problems associated with UI, and through reflection to seek to resolve them. In contrast, staff in Ward C were trapped in an environment designed and built for custodial care in which structural alterations were minimal. Patients in the ward were

physically and mentally more disabled than the residents, had greater self-care deficits, and were more likely to suffer from multiple pathologies and were prescribed more drugs. The levels of UI were very much higher, similar to those found in the preliminary studies in NHS wards and commensurate with the levels shown in the study by MacLaren et al. (1981). Once again the correlation between physical and mental impairment and UI, identified in earlier studies (Isaacs and Walkey, 1964; Hood, 1981; Ouslander et al., 1982), has been confirmed. Gilleard (1981) may therefore be mistaken in predicting a convergence in prevalence of UI between NHS wards and residential homes. The studies reported here have shown the characteristics of the populations to be quite different.

Within the hospital patients were directed to the ward, usually by the medical staff. Although there was evidence of a strong controlling code of practice, particularly among the nursing assistants who had worked in the psychiatric acute sector and who viewed the patients as manipulative, there was also a wish to change, supported by nursing management and medical staff. In Ward C annexe attempts were made to adapt the environment by the different placement of furniture and to increase nurse-patient interaction through the creation of a patient group for whom care was delivered by a limited number of nurses. The reorganisation of care increased a general sense of well-being which, though difficult to measure directly, was felt by medical and nursing staff to have taken place. Modest improvements in furnishings, allied to a slight reorganisation in the approach to nursing care, showed change to be possible. Nurse-patient interactions increased and a modest but definite downward trend in UI was evident. When patients were returned to the main ward area and the more routine care, the pattern of UI returned to near its original levels.

Discussion

The purpose of the study was to develop a greater understanding of how nurses manage UI in confused, elderly patients in institutional care, and to seek a practical solution which staff could agree to implement. The following questions were addressed:

How do nurses approach the problem of UI in confused, elderly patients?

A survey of UI carried out in each of three NHS psychogeriatric wards (A, B and C) over one week showed the percentage of patients wholly continent by day to be low (26%, 11% and 13% respectively), particularly in male wards. This finding, which tends to confirm Hood's (1981) observation that UI in males appeared to be less tractable than in females, has implications for service provision as the numbers of elderly, confused men suffering from a dementing illness and in long-term psychiatric wards has increased over the past few years (see Table 21).

In Wards A and C, 42% and 47% of patients were found to be incontinent of urine twice per day or more often, a figure that rose in Ward B to 60%. In the eyes of the nurses this was a more realistic definition of UI than the twice or more per week used in epidemiological studies. These frequently incontinent patients, who created the bulk of the work related to toileting, cleaning and changing patients, were found to be more often immobile and severely impaired. But only in a few patients (one, five and two patient(s) in each of the wards respectively) was the UI seemingly constant. Most patients showed variations in the number of episodes per day which suggests that UI is not a constant attribute of an individual.

Table 21: Comparison of daytime episodes of urinary incontinence by number of patients in three NHS wards and two residential homes and by frequency of occurrence per week

No. of Episodes	Ward A		Ward B		Ward C		Princess		Cockburn	
	(n=30)	%	(n=28)	%	(n=30)	%	(n=34)	%	(n=30)	%
none	8	27	3	11	4	13	28	82	24	80
5 or less	6	20	6	21	9	30	3	9	2	7
6-10	3	10	6	11	9	10	1	3	3	10
11-15	4	13	4	14	4	13				
16-20	4	13	4	14	3	17			1	3
21-25	4	13	4	14	3	10	2	6		
more than 25	1	3	5	18	3	7				

Findings from participant observations in these wards revealed an approach to patients' toileting needs characterised by four or five toileting rounds daily. There was no evidence of planned care, with some nurses resistant to the introduction of care plans for what was seen as basic nursing care. Other nurses, particularly those whose education was more recent and who had been encouraged to adopt a more integrated and patient-centred approach to care, found it difficult to implement change in the face of resistance from nursing assistants who formed the bulk of the work force. Few of the qualified staff and none of the nursing assistants had received any teaching about the causes and management of UI in the elderly, and consequently the only approach that was known was based on a notional regime of two-hourly toileting. Nurses who wished to change had little knowledge of how and where to begin, and received little support from nursing education or management. The result was a form of practice believed by many to work if only applied consistently. The approach, which might have been effective in a few, correctly identified

patients, was applied indiscriminately and routinely. The problem of UI was exacerbated by poor equipment that had not been evaluated for its effectiveness and that was widely believed to have been bought on grounds of least cost. Consequently, for the nurses, the problem of UI was framed in the context of finding sufficient clean clothes to change severely incontinent patients several times daily.

The routine nature of the care was reinforced by a series of overlapping events, like meals, which were followed by a toileting round and which created pools of intense activity punctuated by lacunae of inertia. But, as these events, particularly the portering and domestic services, originated outside the ward, they were outwith the control of the nurses. This is a feature of hospital life that is likely to intensify as the intent to maximise efficiency leads to an increase in competitive tendering for the supply of ancillary services. It may make economic sense to have all the patients in the day room and all the beds made by 9.30 a.m. so that cleaning can be carried out, but this is antithetical to a philosophy of person-centred care that seeks to preserve old people's remaining functional abilities.

In what ways does the organisational style of a ward affect ways in which nurses approach the problem of UI?

In situations where the organisational style and philosophy are bureaucratic and supportive of controlling codes of practice, the management of UI is more likely to be approached in a routine and task-oriented way. In an organisation where most of the staff are not educated in an explicit philosophy and are often barely trained, it is hardly surprising that an adherence to a routine and orderly model of care becomes a strong defence against anxiety. In situations where outcomes are unclear and there are few rules to follow, people will behave by sticking to a valued, even if unsuccessful, mode of action in the belief that it would work, if only more staff were available (Bott, 1976). The nursing assistants in the NHS wards could see no alternative to routine toileting rounds. At best, these were seen to 'catch' some patients; at worst patients

were changed and skin breakdown was prevented. There was a sense of inevitability about the occurrence of UI, a feeling that was accentuated by management practices that sent a nursing assistant to another ward with little notice, reinforcing a perception that all patients' needs were the same. It is not surprising, therefore, that nursing assistants and auxiliaries, sent to help out in another ward, often see themselves as cogs in a machine, or like workers on an assembly line, carrying out routine tasks.

Though it is undoubtedly heavier and more intensive due to patients' greater physical disabilities, the so-called basic nursing care carried out by nursing assistants in psychogeriatric wards is sometimes seen as not appreciably different from the work in residential homes. This is partly due to the widespread but erroneous belief that basic nursing is not complex. The organisation of any nursing act requires, however, a range of cognitive, interpersonal and managerial skills in addition to motor skills. The Scottish National Nursing and Midwifery Consultative Committee (SNNMCC, 1976) recognised the progression of skills required for a truly competent practitioner, and emphasised the importance of the organisation of self in relation to others as well as the organisation of a chosen course of action in relation to a nursing team. While the motor skills are readily learned, these organisational skills require cognitive and analytic ability, and are intellectual.

Though several differences distinguished the residential homes from the NHS wards, including the functional abilities of residents vis-à-vis the hospital patients, the residential homes possessed two striking characteristics. Firstly, these were units where all members of staff could identify with a particular setting and share in its culture and where the extent of perceived autonomy seemed to be very important. When staff and patients moved from a ward in a psychogeriatric unit to a small self-contained home, improvements in staff morale and in short-term absenteeism were noted (Watson and Anderson, 1987). There were also improvements in levels of UI and in other indices of quality of life which were attributed to an increase in autonomy and a decrease in bureaucracy. Secondly, in

the residential homes less emphasis was placed on routine care. This was partly a function of the number of residents requiring help of a particular kind but was also a reflection of a wholly different approach to care. The normative structure of the homes stressed a commitment to Christian values and the dignity and worth of the individual and was reflected in the value placed on the work of the carers and in recognition of their role as a 'key worker'. The parent organisation ran meetings and workshops for the staff which encouraged the exploration of attitudes and feelings to the elderly and the kind of actions, both positive and negative, that flowed from these attitudinal positions. In turn this affected motivation and zeal: job satisfaction was increased through a measure of responsibility and challenge and a recognition of the key role in care.

In the organisational style known as primary nursing, the professionally qualified nurse has the responsibility to plan and evaluate nursing care for a small group of patients over time and to ensure that care is implemented. In the ward situation this requires a certain number of first-level nurses competent in assessing patients' needs for nursing care as well as in providing the supervision to ensure that care is delivered. But in the nursing journals little attention has been paid to the role of the associate nurse and the support worker who will provide the direct care, certainly in long-term care units. In itself, changing the organisation of care delivery will not change the authoritarian and controlling codes of practice characteristic of routine geriatric care. What appears to have been effective in the residential homes was a combination of devolved responsibility in conjunction with an explicit philosophy of care.

What was the effect of a change in the organisation of nursing care?

In Ward C the introduction of even a prototype system of primary nursing, in effect one person responsible and accountable for the planning and delivery of nursing care for a limited number of patients, was reflected in an increase in the amount of interaction

between nurses and patients. Nurses sat down with patients and spent longer in social and supportive care talk. Improvements were noted in patients' behaviour, in social interaction and in mobility, and although it was impossible to measure, it was felt that those patients were more alert. As it is unlikely those changes arose from any fundamental improvement in the patients' pathological condition, the outcomes are more readily explained by an increased awareness of patients' needs and by the increased availability of a nurse to meet those needs. This, in effect, was the nursing intervention designated as prompted voiding: the increased availability of a nurse willing and able to meet the toileting needs of the patient, and suggests that the flow of events in a dialectical process, from inner biological to physical and to psychological, can be redirected through a nursing intervention. Although nurses cannot reverse a biological state, it was shown to be possible to alter the physical and cultural dimensions of a situation. The long spells of time endured by these patients was broken by spells of more stimulated interactions, encouraged by placing furniture to create small, face-to-face groups and more sociopetal behaviour. But again, the active presence of a nurse was required to engage and stimulate attention. In effect, changing the organisational style of nursing from a routine to an interventionist model was an instance of environmental adaptation. The availability of nurses able and willing to interpret the environment and to make it more accessible to patients served to decrease environmental press and, as a consequence, levels of UI fell.

What was the effect on UI of changes in the physical environment?

As Lawton (1985) points out, the environment surrounds and encompasses the individual, and the one cannot be defined without reference to the other. The interactions between person and environment are subtle, dynamic and continuous. The acquisition of two sets of furniture, two settees and four chairs, plus a small fireplace, allowed some changes to be effected in the annexe of Ward C. Perhaps the most striking effect was through the creation

of two groups of patients with a focus of attention in the fireplace, or in the TV set, or simply from the window. This allowed variations in each individual's environment at different times of the day and resulted from changing the use of space (see acetate attached to Figure 14, p.211). Overall there was a reduction in the density and mass of patients which had been a prominent feature of the main ward. As noted earlier, nurse-patient interaction increased and lasted for longer periods of time as patients and nurses sat down together. The rearrangement of furniture gave a cohesiveness that seemed to be perceived by patients and nurses as more homely, and the behaviour, both of the nurses and the patients, responded in subtle ways. The noise level was less than in the main ward; lighting was better simply because there were more windows at a height that encouraged looking out. But these new patterns of behaviour did not emerge spontaneously. The rearrangement of furniture merely created a potential for increased interaction: to affect UI the availability of a nurse, willing to anticipate need and to respond appropriately, was still required. Some of the physical attributes of the environment could not be altered. The distance to the toilets from the day area was about 30 yards and required patients to cross, first a carpeted area, then a section of floor covered in shiny linoleum. As there were no handrails, crossing this expanse of floor was difficult for some of the old men whose balance was impaired. Thus, though the slight changes to the furniture could lead to increased social interaction, other environmental features acted as a barrier to self-care and independent functioning.

How can interventions derived from behavioural psychology be adapted and synthesised with nursing practice?

It was fairly clear that simply asking nurses to 'prompt voiding' on an hourly basis in confused, old people would have little effect: interventions derived from behavioural psychology cannot simply be applied to nursing practice. The lack of success in programmes of behavioural therapy in institutions has often been attributed to poor staff compliance (Grosicki, 1964). More recently, failure has been attributed to the "disturbing gap between theory and practice"

(Burdett and Milne, 1985:300), which begs the question of whose theory and whose practice? Much less attention has been directed in the literature to the goodness-of-fit between a proposed behavioural intervention and the context and culture of care delivery.

It is debatable whether the intervention described as 'prompted voiding' is accurately described as behavioural as it is not clear to whom the intervention should be directed. Schnelle *et al.* (1984: 236) describe the intervention as "not only teaching patients to request assistance, but also teaching nursing home staff to require such behaviour from the patients **and** to fulfil the patients' requests when made". Schnelle *et al.* (1984) are asking for an increase in the interactions between patient and nurse **and** a change in the attitudes of nurses to the care of old people. The latter is not behavioural and can be addressed only by an exploration of the philosophy of patient care through an examination of nurses' actions.

Exploring nurses' actions and language allowed the intervention termed prompted voiding to be reframed in the language used by nurses. The concept of accident served to link observations within two frames of reference, the physical and biological and the social, helping to define the universe of facts within which the investigation took place (Klausner, 1983). In a perspective in which nursing is viewed as the management of the interaction between person and environment (Flaskerud and Halloran, 1980), a nursing intervention to address the problem of UI is required at the interface between predisposing and precipitating factors, the point at which the probability of an episode of UI is increased. Using the metaphor of accident, the phenomenon of UI was reframed as a series of fundamental - predisposing - and precipitating factors which allowed the locus of the nursing intervention to be identified at the interface between predisposing and precipitating factors (Figure 14, p.227). Reframing the problem of UI in language used by nurses made the problematic seem obvious and the obvious seem novel.

Within a medical perspective, interest lies in the fundamental causes of UI and in the development and application of appropriate

technology, either surgical or pharmacological, to halt or reverse a pathological change. In such cases general rules which lead to a specific end can be applied. But in areas like psychogeriatric nursing where technology is of a very low level, and where outcomes are uncertain, general rules, like those in a behavioural intervention, can be applied only through the use of deliberate strategies. In nursing practice, where knowledge is applied, and particularly when two frames of reference, one biological and the other social, are conjoined, the nature of the problem shifts from being one of simple cause-and-effect, hence the dilemma faced by psychologists attempting to apply the general rules of behavioural psychology to nursing practice. In nursing practice, interest lies in those nursing actions that will serve to increase or decrease episodes of UI. What is termed 'prompted voiding' in behavioural psychology is not substantively different from the method 'time-honoured by nurses' (Castleden and Duffin, 1979) of regular, two-hourly toileting, a strategy based on the simple principle of regular toileting to meet the demands of a low capacity bladder with diminished cortical control. Any real difference lies in a move away from a blanket, impersonal and routine approach to one in which there is systematic and sustained interaction between nurse and nursed, and in which the individual is confirmed as a person with a history and individuality (Drew, 1986).

What is the role of the professionally qualified nurse in the management of UI?

A striking feature of the study was an absence of a systematic, planned care in all three NHS wards. A key supporter of the study, a nursing officer in charge of education and training, told of her difficulties in trying to introduce change in this area. The need to improve these aspects of nursing care, emphasised again in the Annual Reports of the Scottish Hospitals Advisory Service (1984, 1985) was promulgated in Scotland by the National Nursing and Midwifery Consultative Committee (1976, 1981). Within the framework of activities of daily living, the focus adopted for analysis of the nursing role was the patient or client and his or her need for

nursing care, and the development, implementation and evaluation of a plan of nursing care to meet those needs. But, in common with attempts to develop a conceptual framework for nursing in the United States, there was a failure to articulate the relationship between nurse, patient and the wider environment. Although the SNNMCC in its document refers to a "recognition of the immediate and long-term needs of the individual and his or her social group both within and without the actual care setting" (1976:54), a serious omission lies in a failure to make explicit the need for a nursing assessment of the demands made upon the individual by the environment. While the SNNMCC recognises in a registered nurse the development of increasing independence of judgement and the ability to comprehend a working situation of increasing complexity, there is no evidence that the necessary analytical or constructional skills are encouraged or inculcated, either in programmes of in-serve or post-basic education. To deliver nursing care to patients with multiple pathologies and with interrelated physical, emotional and social dependency requires the capacity to adapt situations and resources. The SNNMCC identify the role of the qualified nurse as "essentially that of the team leader with increasing independence of judgement" (para. 5.3). In addition to identifying the needs of a patient for nursing care and planning ways to meet that need, the qualified nurse must also ensure that a plan of care is implemented. This aspect of care was identified by the SNNMCC as membership of a team; either as leader of the nursing team(s) able to negotiate the necessary resources to deliver care, or as a single member of the multidisciplinary team, to call upon the help and expertise of others. In the setting of psychogeriatric care this requires communication, and hence the need for a written plan of care. To ensure the care is carried out as planned requires supervision, either through direct supervision and scrutiny of the actions of others while in progress or as an outcome. But supervision can also be carried out through delegation, a method that is central to a system of primary nursing (Zander, 1985; Hooton, 1987; Hunt, 1988; MacDonald, 1988; Perala, 1988), in a process of devolved responsibility and accountability. To ensure implementation of a plan of nursing care in a situation in which the staff comprises a large proportion of nursing auxiliaries, nursing

assistants or support workers requires organisation and staff motivation.

The role of the professionally qualified nurse caring for a confused and incontinent patient is to identify that patient's idiosyncratic needs for nursing care within a framework of the activities and demands of daily living; to plan and evaluate nursing interventions to meet those needs and to implement that plan through communication and supervision of others as required.

In which ways could the nursing management of UI be improved?

Interventions developed through participation with staff in two sites were tested as single case experimental studies. In one set of studies a limited number of nurses delivered total nursing care to a small group of elderly men, creating in effect a system of primary nursing. A nursing intervention to increase fluid intake and appropriate use of the toilet, and hence to decrease the number of episodes of UI, was planned and implemented. In patients with initially severe UI there was a marked decrease in the number of episodes over a period of four weeks. When the intervention ceased and the men were returned to a routine style of nursing with no individualised and patient-centred care, levels of UI returned to those of the baseline. This suggests that, to sustain a change in levels of UI, requires an appropriate intervention as well as a change in the organisation of nursing care as it is unlikely that the intervention could be implemented without the availability of a nurse.

Another set of single case studies was designed to see whether improvements in the legibility of the environment in conjunction with a programme of guided orientation would reduce the number of episodes of UI. The findings suggested that, although inability to locate the toilet was not uncommon in the confused elderly, the use of signposts alone was of limited benefit. Though the signs were found to be useful in giving staff a clear and unambiguous means of identi-

fyng the route to the toilet for confused residents, a member of staff was required to interpret the environment.

A major finding from both interventions was the need for assistance from another person to interpret differing aspects of the environment. In the setting of institutional care, availability must be added to the list of attributes of the environment compiled by Windley and Scheidt (1980). The nursing management of the confused and incontinent patient can be improved by ceasing the treatment of individual patients as one of an amorphous group by planning nursing interventions, and by making available a nurse willing and able to meet idiosyncratic needs.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

. . . imagination, I remind you, in considerable part consists of the capacity to shift from one perspective to another.

(C. Wright Mills, The Sociological Imagination, 1970:232)

Studies in long-term care institutions in the United Kingdom and in the United States have shown a high correlation between physical and mental disability and levels of UI. The management of UI, which was identified as a nursing responsibility, is poorly understood and a need was identified for studies to examine the complex relationship between the social and physical environment, patient characteristics and the organisation of nursing care. The objectives of the study were to:

- explore the ways in which nursing staff approached the problem of UI in elderly, confused people;
- examine the effect of the organisation of care on the management of UI;
- examine the application of principles derived from behavioural psychology to nursing practice.

Two main propositions, derived from the literature, were used to guide a series of case studies in three psychogeriatric wards in NHS hospitals and in two residential homes for the elderly. Insights drawn from these preliminary studies were applied in an action-research component and single case experimental studies in the two final case studies.

In the first proposition it was argued that, under the conditions of a routine geriatric model of care in which nursing care is delivered without regard for individual traits, a system of routinised care is perpetuated, and that under these conditions levels of UI will be high. In all three psychogeriatric wards levels of UI were found to be high although there were marked variations between, as well as within, wards. The number of patients found to be continent over the period of one week ranged from 11 to 27% of all patients. Under the conditions of the routine geriatric model, nursing care of the incontinent patient was found to be organised as a series of tasks related to toileting rounds. Characterised by a low level of technical knowledge and where much of the available technology is derived from behavioural psychology, a clear differentiation between the skills of the qualified and the unqualified nurse is not always apparent in psychogeriatric wards. The main workforce, the nursing assistants, have learned their skills

in the workplace where knowledge about the causes and management of UI among nurses of all grades was found to be limited. There was no evidence of a planned and systematic approach to care and, consequently, UI was not identified as a problem in need of solution. Flexibility in approaches to nursing care was constrained by a lack of knowledge of how to initiate change as well as by the imperatives of the wider organisation which lay outwith the control of nurses.

A routine style of nursing care was sustained by a hierarchical organisational style in which a strong code of collective practice reinforced a division between nurse and patient. Though nurses are exhorted to adopt patient-centred and individualised care, in practice there is a powerful conflict in caring for the individual within a collective and congregate setting.

These findings have implications for service provision for the confused elderly. Not only is there evidence (from Scottish Health Service statistics) that the number of elderly men, as well as women, being admitted to long-term psychogeriatric units is increasing, there is also evidence (Thomas et al., 1980) that UI increases in men aged 75 years and above. To care for the needs of this group in terms of UI alone will have implications for the costs of laundry, equipment and staff. Changes in the structure of the health services in Scotland, especially in the provision of long-term care for the elderly, must also be considered, for the admission of patients or residents suffering from UI remains problematic in many settings. The studies by Bland and Bland (1986) show more restrictive admission policies in residential care. While evidence is lacking concerning admission policies in the growing private sector, attention must be given to the patient mix in private homes to prevent the selection of the more functionally able patients, leaving the more severely handicapped to be cared for in NHS institutions. Patients' functional characteristics should be assessed on admission and should be monitored over time. Such careful studies over time might help to shed light on whether UI is a consequence of pathological deterioration or of the effects of institutional care.

In the second proposition it was argued that, when nurses have an articulated professional role, their perception of appropriate care will take the form of an intervention model. Under the conditions of an intervention model, nursing care is delivered around a structured intervention which is planned, recorded and evaluated. When these conditions prevail, levels of UI will be reduced. In the intervention model the nursing perspective evolved from the practical aim of optimising the environment of care to promote maximum well-being and of decreasing the effects of environmental stress through the management of the interaction between person and environment. Comparisons drawn between psychogeriatric wards and residential homes found levels of UI to be significantly lower in residential homes than in the hospital wards, but, more importantly, there was an absence of routine care. This was related to an explicit philosophy of care in conjunction with a measure of responsibility for the well-being of residents devolved to key workers. These insights were applied in one of the study wards where an action-research component involved a slight realignment of furniture to create small, face-to-face groups in conjunction with a reorganisation of nursing work along the lines proposed in primary nursing.

Two interventions were developed with staff. In one of the residential homes attempts were made to decrease levels of UI by increasing the legibility of the environment through improved signposting and guided orientation. Though the signs were found by staff to be useful, signs alone were found to be insufficient as a guide to confused, old people in whom the ability to process information from the environment is compromised. As in the hospital wards, staff knowledgeable of the effects of a dementing illness, and available to mediate and moderate the environment, were needed. To make this effective, however, required a shift in the ways in which nursing care was organised and delivered. The use of prompted voiding by itself is unlikely to be sufficient to affect levels of UI.

Theory-practice gap

While there is agreement that theories in nursing must include the notion of nursing as action (Flaskerud and Halloran, 1980; Schrock, 1981; Visintainer, 1986), explanations of how these nursing actions interrelate with the person and environment to promote health and well-being are needed also. Clinical nursing research must therefore seek to provide evidence that nursing actions have a demonstrable potential to improve care (Schrock, 1981). But, unlike medical or surgical interventions that are derived from anatomy or biochemistry, that is, on a single frame of reference, nursing interventions require a transitional concept to bridge two frames of reference. Conceptualising UI as accident provided a bridging concept and was revealed to be a powerful heuristic which could be further developed as a teaching tool for nurses. In confirming the locus of the nursing intervention at the interface between inner biological or psychological events, support is given to the idea of the nurse as managing, mediating or facilitating the interaction between person and environment. If managing or mediating the interaction between person and environment is uniquely a nursing activity, studies are needed to explore different aspects of different environments as these relate to health and illness. Such studies would help to elucidate the nature of nursing actions taken by the nurse to provide the help or assistance required by a patient to restore or extend his ability to cope with the demands of a situation. In dialectical terms this would elucidate those nursing actions directed to the provision of an environment conducive to healing through the restoration of synchrony.

Theories for practice should help the practitioner to identify patterns of nursing actions that, suitably combined, will be useful in different situations. The practical reasoning required in nursing practice is concerned with the right actions in a particular context and in making choices where ends are not determinate. There is no master set of rules for the management of UI in confused, old people, and psychological concepts and behavioural approaches cannot simply be applied to nursing practice because these fail to take

account of the complex relationships between nurse, patient and the environment of care. Psychological concepts and approaches can, however, be adapted and synthesised into nursing practice. If the principles underlying actions are understood, then a competent practitioner will be able to transfer these principles in the resolution of problems in different situations.

Person-environment-nurse

A theme recurring throughout this study has been the need for a nurse available to offer help to old people who suffer the indignities of UI. Schmidt (1972) combined Orlando's (1961) concept of deliberative nursing with the belief expressed by Wiedenbach that nursing is rooted in an explicit philosophy and directed toward the fulfilment of a specific purpose: to develop the notion of availability. Two forms of availability were identified: receptive availability through observation and listening to the needs of patients, and ministrative ability, the presence of a nurse, willing and able to offer help.

In the nurse-patient relationship, the patient is dependent upon subtle psychological messages from the nurse; lack of responsiveness from the nurse can lead to a reduction in self-esteem. Patients are confirmed in a belief that the nurse is actively caring through eye contact, touch and an unhurried manner (Drew, 1986). Through this relationship of active and positive nursing, which are grounded in a nurses' judgement and awareness of the needs of a patient at a particular time, by being available and confirming the worth of the individual, the nurse can act to reduce the strength of environmental press and can make a major difference to the quality of outcome for a person of low competence. These are the nursing actions that link person and environment: by mediating the environment, physically and psychologically, nurses can facilitate the person-environment interaction.

Though nursing has also recognised an interpersonal relationship and has been described as an "empathic and compassionate inter-

personal process that supports the dependent needs of the patient and promotes independence" (Fenton, 1987:83), the nature of that relationship with the individual needs to be clarified and made coherent, particularly the ways in which the relationship fits into a predominantly bureaucratic organisation with strict demarcation of boundaries. The devolved and decentralised organisational role of the key worker, based on interpersonal relationships, is made explicit in terms of the case-work relationship. If nursing also adopts a case-work relationship, as is implicit in primary nursing, nursing management will be unable to shift key workers, be they first level nurses or nursing assistants, between wards at short notice, and this will have implications for the skill mix and numbers in a ward.

These studies have confirmed observations of a routine approach to care made by researchers in the 1960s and 1970s. A routine approach is sustained by the controlling codes practised, especially by many nursing auxiliaries. A more integrated code of practice is promised by the interventionist approach to nursing care inherent in the process of nursing where the key role of the qualified nurse has been identified as the management of the interaction between person and environment to reduce environmental press.

Nurses in the NHS wards that took part in the study knew about patients' physical and psychological needs for nursing care, but showed less understanding of the reciprocity between person and environment, and of ways to approach problem solving. More conscious attempts by nurse teachers are needed to develop nurses' intellectual skills in methodological thinking which are pre-requisites for analytical thinking and reflective problem-solving. Tutors on the post-basic courses in care of the elderly need to be aware of this gap and incorporate into courses problem-solving strategies that encourage reframing and reflective thinking. Studies should be undertaken to see whether the organisation and delivery of care of the elderly are different in wards where sisters/charge nurses have been exposed to further education.

In all units where old people are cared for, there is a need to make explicit a philosophy of care that stresses the concept of professional nursing practice and the entitlement of each patient to a complete nursing assessment, plan and evaluation of the effectiveness of nursing care by a registered nurse. Nurses and care workers found the simple assessment instruments helpful: the measurements were found to be better than unaided individual judgement, and staff were able subsequently to incorporate such measures into plans of care.

The interventions described in the single case studies were chosen to provide a demonstration and elaboration of a nursing intervention and its evaluation. As Barlow et al. (1984) point out, many practitioners are already doing evaluations of interventions that would provide invaluable knowledge, provided they follow the guidelines required for good professional practice. Clinical practice can be combined with research if the practical requirement of systematic assessment is combined with the research requirement of systematic and repeated measurement, and if the practical need for individual treatment is combined with the research requirement that treatments are specified in such a way that replication by another is possible.

Nurses themselves revealed a tacit knowledge of the interventions in the language they used. What was lacking was application in a systematic way rather than in a haphazard and ad hoc manner in which some patients are 'reminded to go' by some members of staff, and at other times are overlooked. Two changes to ward practice are required: firstly, nurses must assess patients' toileting abilities and deficits with greater accuracy using explicit quantification if possible. Too often nurses create incontinence charts but appear unable to interpret these other than in a subjective and impressionistic manner. As ward sisters and charge nurses come to manage their own budgets, the ability to gather and interpret simple information about patients and to match needs to resources will become of increasing importance and should be encouraged. As the nurses in the main study ward found, involving staff of all grades and being

shown the results of a survey of UI for one week, helped to increase awareness of patients' idiosyncratic needs and to develop an integrated and more explicit philosophy of care. Secondly, to have any impact on UI, certain patients must be targeted and made the active responsibility of an individual nurse. If improvements can be shown in patients with fairly severe UI, improvements are possible with those patients in whom UI is less pressing. It must be recognised, however, that to be effective, prompted voiding, 'pointing him in the right direction', or 'reminding him to go', requires available nurses, which is a matter not only of ward organisation but also of staff motivation.

At the top end of the spectrum of UI, with those patients who are severely and intractably incontinent, consideration should be given to the use of the new generation of highly effective and expensive incontinence pads. If patients require to be actively or passively mobilised, this should be carried out with intention and recorded in a plan of nursing care and not incorporated into the rough and tumble of a toileting round in an ad hoc manner. As a corollary, if even two nurses were relieved of the task of washing and changing clothes for a single patient up to five times daily, more time would be available for other needs to be met.

Nursing management must be prepared to support and encourage a more integrated code of practice through the development of an explicit philosophy of care that links patients and nurses, practice and education. Management should also help staff at ward level to translate these philosophies into achievable goals and standards. In education, a focus on teaching nurses to reframe a problem in a nursing perspective, mediating or managing the interaction between person and environment, would help to elucidate that elusive phenomenon of nursing, but teachers must be prepared to leave the classrooms and become involved in situations of care. More participatory research is needed and researchers should continue to examine the practice of nursing, particularly the interrelations between person, environment and nursing. Management of the interaction between person and environment has provided a very powerful heuristic

which could apply equally to a study of wound care or a study of the nursing relationship with a dementing old person.

Research is needed into the constraints under which nursing is practised. Is the quality of nursing care improved when bureaucracy is reduced? Comparative studies of the quality of care in NHS wards compared to the Timbury-style wards would be helpful. Studies should be undertaken to see whether the organisation and delivery of care of the elderly are different in wards where sisters/charge nurses have been exposed to further education.

Studies of the associate nurse and of the support worker are needed. More needs to be known about the organisation of care for the elderly in the private sector, in particular the teaching programmes developed for nursing assistants and auxiliaries. A comparative study of the organisation and delivery of care in the small independent home, in the larger units now springing up and in NHS wards would be valuable. Such studies should examine the functional characteristics of patients, the environmental attributes of the different settings and the philosophies, organisation and delivery of care.

Further studies of ways in which nurses seek to help old people who are suffering from UI, in particular, replication studies of the intervention described, are needed. More needs to be known about urination in an inappropriate place. This is indeed a very complex area, closely associated with quality of care. It would be helpful to develop a system in which all patients admitted to long-term care were assessed very fully in terms of functional competence, not only at the point of admission, but also at regular intervals to see whether the trajectory of decline can be identified. Based on the findings of this study, the following recommendations are made.

Management should seek to develop a more integrated code of practice and encourage further professional development in their staff, not only in relation to the clinical aspects of care, but also in seeking to develop a nursing perspective in which nurses "think" nursing.

Nurse education also has a critical role to play in developing a truly nursing perspective on care. Nurse teachers need a greater awareness of the causes and management of UI in the elderly. Quite clearly, the causes and management of UI in the elderly are much more complex in the face of the multiple pathologies of ageing than in younger populations.

Nursing practice. Nurses should endeavour to introduce and monitor the effects on patient care of primary nursing, particularly in areas of practice like UI and pressure area care as well as more subtle, psychological aspects. In situations of long-term care, where the balance of professionally qualified nurses and the less well trained is difficult to identify, ward sisters and charge nurses should seek to develop a modular approach to nursing care restricting the fragmentation of care.

Nursing research. More research in conjunction with practitioners is required. Nurses need to be encouraged to develop and test nursing interventions and, for that to happen, researchers must be prepared to enter the messy world of practice, if necessary lowering their expectation of clear-cut results. Studies of primary nursing and the effects of the introduction of the support worker are needed, and more requires to be known of the constraints under which nursing is practised. If an understanding of the management of change is to be enhanced, such studies are necessary. More needs to be known about the effects of changes in the environment on levels of UI. What, for example, is the effect of upgrading the facilities of a unit? Does a division into smaller units have any effect? These are often opportunistic studies, but such opportunities for research should be grasped. Single case studies may provide an interesting means for supported and interested nurse practitioners to conduct research in their clinical area, but such research must be participatory, involving practitioners, and researchers would have to accommodate to a longer time perspective.

My tasks are all near a close, and in writing this final record . . . the very sound of my pen admonishes me.

(John Galt, The Annals of the Parish, 1821:160)

BIBLIOGRAPHY AND REFERENCES

- ABDELLAH, F.G. (1960) Patient Centred Approaches to Nursing. New York: Macmillan Pub. Co. Inc.
- ADAMS, G.A. and McILWRAITH, P.L. (1963) Geriatric Nursing: A Study of the Work of Geriatric Ward Staff. London: Oxford University Press.
- AGATE, J. (1970) Modern Geriatric Medicine. 2nd edn. London: W. Heinemann Medical Books Ltd.
- ALEXANDER, J.R. and ELTON, A. (1979) "Characteristics of elderly people admitted to hospital, part 3 homes and sheltered housing", Journal of Epidemiology and Community Health, 33:91-95.
- ANDREW, J. and NATHAN, P.W. (1964) "Disorders of micturition", Brain, 87:233-262.
- ARCHBOLD, P. (1981) "Ethical issues in the selection of a theoretical framework for gerontological nursing research", Journal of Gerontological Nursing, 7(7):408-411.
- ARGYRIS, C. and SCHON, D.A. (1984) Theory in Practice: Increasing Professional Effectiveness. California: Jossey-Bass Inc.
- ARGYRIS, C., PUTNAM, R. and SMITH, D.M. (1985) Action Science: Concepts, Methods and Skills for Research and Intervention. San Francisco: Jossey-Bass Inc.
- ARIE, T. (1981) Health Care of the Elderly. London: Croom Helm.
- ARIE, T., CLARKE, M. and SLATTERY, Z. (1976) "Incontinence in geriatric psychiatry", in F.L. Willington (ed.), Incontinence in the Elderly, pp.70-84. London: Academic Press.
- ARIE, T. and JOLLEY, D. (1982) "Making services work", in R. Levy and F. Post (eds.), The Psychiatry of Late Life, pp.222-229. Oxford: Blackwell.
- AYER, A.J. (1987) Language, Truth and Logic. Logical Positivism in Perspective. London: Croom Helm.
- AZRIN, N.H. (1973) "Dry bed: a rapid method of eliminating bed-wetting", Behaviour Research Therapy, 11:427-434.
- AZRIN, N.H. (1977) "A strategy for applied research: learning based but outcome oriented", American Psychologist, 32:140-149.
- BAKER, D. (1978) "Attitudes of Nurses to the Care of the Elderly". Unpublished Ph.D. thesis, University of Manchester.
- BALDAMUS, W. (1961) Efficiency and Effect: An Analysis of Industrial Administration. London: Tavistock Pub.
- BALTES, P.B. and WILLIS, S.L. (1979) "The critical importance of appropriate methodology in the study of ageing", in

- F. Hoffmeister and C. Muller (eds.), Brain Function in Old Age, pp.164-178. Berlin: Springer-Verlag.
- BALTES, M. and BALTES, P. (eds.) (1986) The Psychology and Control of Aging. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- BARKER, P.J. (1982) Behaviour Therapy Nursing. London: Croom Helm.
- BARKER, R. (1968) Ecological Psychology: Concepts and Methods for Studying the Environment of Human Behaviour. Stanford, California: Stanford University Press.
- BARLOW, D.H., HAYES, S.C. and NELSON, R.O. (1984) The Scientist Practitioner. New York: Pergamon Press.
- BARROWCLOUGH, C. and FLEMING, I. (1986) Goal Planning with Elderly People: How to Make Plans to Meet an Individual's Needs. A Manual of Instruction. Manchester: Manchester University Press.
- BECKSTRAND, J., (1978) "The need for a practice theory as indicated by the knowledge used in the conduct of practice", Research in Nursing and Health, 1(4):175-179.
- BENOLIEL, J.Q. (1977) "The interaction between theory and research", Nursing Outlook, 25:108-113.
- BERGMANN, K. (1985) "Epidemiological aspects of dementia and consideration in planning services", Danish Medical Bulletin 32 (Supp. 1):84-91.
- BERRIOS, G.E. (1987) "The nosology of the dementias: an overview", in B. Pitt (ed.), Dementia, pp.19-51. Edinburgh: Churchill Livingstone.
- BESDINE, R.W. (1983) "The educational utility of comprehensive functional assessment", Journal of the American Gerontology Society, 31(11):651-656.
- BIRREN, J.E. (1964) The Psychology of Ageing. Englewood-Cliffs, New Jersey: Prentice-Hall.
- BIRREN, J.E., WOODS, A.M. and WILLIAMS, M.V. (1979) "Speed of behaviour as an indicator of age changes", in F. Hoffmeister and C. Muller (eds.), Brain Function in Old Age, pp.150-163. Berlin: Springer-Verlag.
- BLAND, R. and BLAND, R.E. (1984) "Recent research in old people's homes: a review", Research, Policy and Planning 1(1):16-24.
- BLAND, R.E. and BLAND, R. (1986) "Trends in dependency in Scottish local authority old people's homes", Research, Policy and Planning, 4(1):25-29.
- BLESSED, G., TOMLINSON, B.E. and ROTH, M. (1968) "The association between quantitative measures of dementia and of senile change in

- the cerebral grey matter of elderly subjects", British Journal of Psychiatry 114:797-811.
- BOOTH, T. (1982) "A reliable assessment schedule for use on homes for the elderly", Social Work Service, 29 March, pp.48-53.
- BOOTH, T., BARRITT, A., BERRY, S., MARTIN, D.M. MELOTTE, C. and STONE, S. (1982) "Levels of dependency in local authority homes for the elderly", Journal of Epidemiology and Community Health, 36:53-57.
- BOOTH, T., PHILLIPS, D.T., BARRY, A., BERRY, S., MARTIN, D.M. and MELOTTE, C. (1983) "Patterns of mortality in homes for the elderly", Age and Ageing, 12:240-244.
- BOTT, E. (1976) "Hospital and society", British Journal of Medical Psychology, 49:97-140.
- BOTWINICK, J. (1977) "Intellectual abilities", in J.E. Birren and K.W. Schaie (eds.), Handbook of the Psychology of Ageing, pp.129-143. Cincinnati: Van Nostrand Reinhold.
- BOULDING, K. (1985) Human Betterment. Beverly Hills: Sage.
- BRADLEY, W.E., TIMMS, G.W., BRANTLEY, S.F. (1974) "Innervation of the detrusor muscle and urethra", Urologic Clinics of North America, 1:3-27.
- BRANDSTADTER, J. (1978) "Relationship between life-span developmental theory, research and intervention: a revision of some stereotypes", in R.R. Turner and H.W. Reese (eds.), Life-Span Developmental Psychology, pp.3-25. New York: Academic Press.
- BRANDSTADTER, J. (1980) "Relationships between life span developmental theory, research and intervention", in R. R. Turner and H.W. Reese (eds.), Life-Span Developmental Psychology, pp.3-25. New York: Academic Press.
- BROCKLEHURST, J. (1977) "The causes and management of incontinence in the elderly", Nursing Mirror (Supp.), xi-xxv, April 14th.
- BROCKLEHURST, J.C. (1984) Urology in the Elderly. Edinburgh: Churchill Livingstone.
- BROCKLEHURST, J.C. and DILLANE, J.B. (1966a) "Studies in the female bladder in old age: cystometrograms in non-incontinent women", Gerontologica Clinica, 8:285-287.
- BROCKLEHURST, J.C. and DILLANE, J.B. (1966b) "Studies in the female bladder: cystometrograms in 100 incontinent women", Gerontologica Clinica, 8:806-808.
- BROCKLEHURST, J.C., ANDREWS, K., RICHARDS, B. and LAYCOCK, P.J. (1985) "Incidence and correlates of incontinence in stroke

- patients", Journal of the American Geriatrics Society, 33:540-542.
- BROE, G.A., AKHTAR, A.J., ANDREWS, G.R., CAIRD, F.L., GILMORE, A.J.J. and MACLENNAN, W.J. (1976) "Neurological diagnosis of the elderly at home", Journal of Neurology, Neurosurgery and Psychiatry, 39:362-366.
- BROMLEY, D.B. (1984) The Psychology of Human Ageing. 2nd edn. London: Penguin Books.
- BURDETT, C. and MILNE, D. (1985) "'Setting events' and staff behaviour", Behavioural Psychotherapy, 13:300-308.
- BURNS, A., JACOBY, R. and LEVY, R. (1990) "Psychiatric phenomena in Alzheimer's disease: disorders of thought content, perception, mood and behaviour", British Journal of Psychiatry, 157:72-91.
- BURNSIDE, I.M. (1984) Nursing and the Aged, 2nd edn. New York: McGraw Hill Book Co.
- BUTLER, R. and LEWIS, N. (1973) Aging and Mental Health. St. Louis: C.V. Mosby.
- CAMPBELL, A.J., REINKEN, K. and McCOSH, L. (1985) "Incontinence in the elderly: prevalence and prognosis", Age and Ageing, 14: 65-70.
- CAPLAN, A.L. (1986) "Exemplary reasoning? A comment on theory structure in biomedicine", Journal of Medicine and Philosophy, 11:93-105.
- CARDOZO, L.D., STANTON, S.L., ROBINSON, H. and HOLD, D. (1980) "Evaluation of Fluribrofen in detrusor instability", British Medical Journal, 1:281-282.
- CARPENTER, H.A. and SIMON, R. (1960) "The effect of several methods of training on long term, incontinent, behaviourally regressed hospitalized psychiatric patients", Nursing Research, 9(1):17-22.
- CARPER, B. (1978) "Fundamental patterns of knowing in nursing", Advanced Nursing Science, 1(1):13-22.
- CARRICK, J., RAMCHURN, L., MALONE-LEE, J. (1988) "Urinary incontinence in a large psychiatric hospital", Health Trends, 20: 118-119.
- CARSTAIRS, V. and MORRISON, M. (1971) The Elderly in Residential Care. Scottish Home and Health Department booklet. Edinburgh: HMSO.
- CASTLEDEN, C.M. and DUFFIN, H.M. (1981) "Guidelines for controlling urinary incontinence without drugs or catheters", Age and Ageing, 10:186-190.

- CASTLEDEN, C.M., DUFFIN, H.M. and ASHER, M.J. (1981) "Clinical and urodynamic studies in 100 elderly patients", British Medical Journal, 282:1103-1105.
- CASTLEDEN, C.M., DUFFIN, H.M., ASHER, M.J. and YEOMANSON, C.W. (1985) "Factors influencing outcome in elderly patients with urinary incontinence and detrusor instability", Age and Ageing, 14:303-307.
- CATTELL, R.B. (1963) "The theory of fluid and crystalline intelligence", Journal of Educational Psychology, 54:1-22.
- CHANFREAU-RONA, D., BELLWOOD, S. and WYLIE, B. (1984) "Assessment of a behavioural programme to treat incontinent patients in psychogeriatric wards", British Journal of Clinical Psychology, 23:273-279.
- CHANFREAU-RONA, D., WYLIE, B. and BELLWOOD, S. (1986) "Behaviour treatment of daytime incontinence in elderly male and female patients", Behavioural Psychotherapy, 14:13-20.
- CHERNISS, C. (1980) "Human service programmes as work organisations: using organisational design to improve staff motivation and effectiveness", in Richard H. Price (ed.), Evaluation and Action in the Social Environment, pp.125-153. New York: Academic Press.
- CLARKE, M. (1986) "Action and reflection: practice and theory in nursing", Journal of Advanced Nursing, 11:3-11.
- CLARKE, M., CLARKE, S., ODELL, A. and JAGGER, C. (1984) "The elderly at home: health and social status", Health Trends, 16:3-7.
- CLARKE, M., HUGHES, A.O., DODD, K.J., PALMER, R.L., BRANDON, S., HOLDEN, A.M. and PEARCE, D. (1979) "The elderly in residential care: patterns of disability", Health Trends, 11:17-20.
- CLAY, E.T. (1978) "Incontinence of urine: a regime for retraining", Nursing Mirror, 146 (March 16), 23-25.
- CLAYTON, P.J. and MARTIN, R. (1981) "Classification of late life organic states and the DSM-III", in N.E. Miller and G.D. Cohen (eds.), Clinical Aspects of Alzheimer's Disease and Senile Dementia (Aging: Vol. 15), pp.47-59. New York: Raven Press.
- CONNORS, D.D. (1988) "A continuum of researcher-participant relationships: analysis and critique", Advanced Nursing Science, 10(4):32-42.
- COOPER, J.E. (1988) "The structure and presentation of contemporary classifications with special reference to ICD-9 and -10", British Journal of Psychiatry, 152 (Supp. 1), 21-28.

- COPE, D. (1981) Organisation, Development and Action Research in Hospital. Aldershot: Gower.
- COPELAND, J.R.M. (1987) "The diagnosis of dementia in old age", in B. Pitt (ed.), Dementia, pp.52-68. Edinburgh: Churchill Livingstone.
- COPELAND, J.R.M., KELLEHER, M.J., GURLAND, B.J. and SHARPE, L. (1975) "Cross national study of diagnosis of mental disorders: a comparison of the diagnosis of elderly psychiatric patients admitted to mental hospitals serving Queens County, New York and the Old Borough of Camberwell, London", British Journal of Psychiatry, 126:11-20.
- CORSELLIS, J.A.N. (1962) Mental Illness and the Ageing Brain. London: Oxford University Press.
- CRAIK, K. (1970) "Environmental psychology", in K.H. Craik, B. Kleinmuntz, R.L. Rosnow, R. Rosenthal, J.R. Cheyne and R.H. Walters (eds.) New Directions in Psychology, pp.1-121. New York: Holt, Rinehart and Winston.
- CRAWFORD, G., DUFAULT, K. and RUDY, E. (1979) "Evolving issues in theory development", Nursing Outlook, 27(5):346-351.
- CREASON, N.S., GRYBOWSKI, J.A., BURGNER, S., WHIPPO, C., YEO, S.A. and RICHARDSON, B. (1989) "Prompted voiding therapy for urinary incontinence in aged female nursing home residents", Journal of Advanced Nursing, 14:120-126.
- CRONBACH, L.J. (1980) Toward Reform of Program Evaluation: Aims and Methods. San Francisco: Jossey-Bass Inc.
- CUMMINGS, E. and HENDRY, W. (1961) Growing Old: The Process of Disengagement. New York: Basic Books.
- DAILY, J.S. and SATTERLEY, M.C. (1986) "Unitary human beings", in A. Marriner (ed.), Nursing Theorists and Their Work, pp.74-92. St. Louis: C.V. Mosby Co.
- DENZIN, N.K. (1978) The Research Act: A Theoretical Introduction to Sociological Research Methods, 2nd edn. New York: McGraw-Hill Book Co.
- DEPARTMENT OF HEALTH AND SOCIAL SECURITY, Identification of Toilet Areas in Psychogeriatric Wards. A Report on Colour and Sign Recognition. Report SUI. London: HMSO.
- DEWEY, J. (1933) How We Think. Lexington, Mass.: Heath Pub.
- Diagnostic and Statistical Manual of Mental Disorders (1980) edn. III. Washington, D.C.: American Psychiatric Association.
- DICKOFF, J. and JAMES, P. (1965) "Theory of theories: a position paper", Nursing Research 17:197-203.

- DICKOFF, J. and JAMES, P. (1986) "Symposia on theory development in nursing", in L.H. Nicholl (ed.), Perspectives on Nursing Theory, pp.108-110. Philadelphia: Aspen Pub.
- DIERS, D. (1969) "Situation producing theory", in C. Norris (ed.), Proceedings of the Second Nursing Theory Conference, University of Kansas, pp.45-92.
- DISABLED LIVING FOUNDATION (1981) Incontinence: a Bibliography compiled by D. Mandelstam and P. Lane. Chertsey: Reed Books.
- DODWELL, D. (1987) "Dementia: the clinical picture", in B. Pitt (ed.), Dementia, pp.174-196. Edinburgh: Churchill Livingstone.
- DOLEYS, D.M. and MEREDITH, R.L. (1982) "Urological disorders", in D.M. Doleys (ed.), Behavioural Medicine: Assessment and Treatment Strategies, pp.318-348. New York: Plenum Pub.
- DONALDSON, L. (1984) "Longitudinal changes in functional capacity among surviving old people continuously resident in hospitals and homes". Journal of Epidemiology and Community Health, 38:240-246.
- DONALDSON, L.J. and JAGGER, C. (1983) "Survival and functional capacity: three year follow up of an elderly population in hospitals and homes", Journal of Epidemiology and Community Health, 37:176-179.
- DONALDSON, L.J., CLARKE, M. and PALMER, R.L. (1983) "Institutional care for the elderly: the impact and implications of an ageing population", Health Trends, 15:58-61.
- DONALDSON, S. and CROWLEY, D.M. (1978) "The discipline of nursing", Nursing Outlook, February, 113-120.
- DONTAS, A.S., KASUIKI-CHARVAT, P., PANAYIOTIS, C., PAPANAYIOTOU, M.D. and MARKETOS, S.G. (1981) "Bacteriuria and survival in old age", New England Journal of Medicine, 304(16):939-943.
- DREW, N. (1986) "Exclusion and confirmation: a phenomenology of patients' experiences with caregivers", Image, 18(2):39-43.
- EASTWOOD, H.D.H. (1979) "Urodynamic studies in the management of urinary incontinence in the elderly", Age and Ageing, 14:41-48.
- EASTWOOD, H.D.H. and SMART, C.J. (1985) "Urinary incontinence in the disabled elderly male", Age and Ageing, 14:235-239.
- EASTWOOD, H.D.H. and WARRELL, R. (1984) "Urinary incontinence in the elderly female: prediction in diagnosis and outcome of management", Age and Ageing, 13:230-234.
- EBBUTT, D. (1985) "Educational action research. Some general concerns and actual quibbles", in R.G. Burgess (ed.), Issues in

- Educational Research: Qualitative Methods, pp.155-166. Lewes: Falmer Press.
- EGAN, M., PLYMAT, K., THOMAS, T. and MEAD, T. (1983) "Incontinence in patients in two district general hospitals", Nursing Times, 79(5):22-23.
- EISDORFER, C., COHEN, D. and PRESTON, C. (1981) "Behavioural and cognitive therapies in the older patient with cognitive impairment in clinical aspects of Alzheimer's disease", in N.E. Miller and G.D. Cohen (eds.), Clinical Aspects of Alzheimer's Disease and Senile Dementia (Aging: Vol. 15), pp.84-102. New York: Raven Press.
- ERIKSEN, E. (1963) "The eight stages of man", in Childhood and Society. New York: Newton.
- EVANS, I.M. and LITZ, B.T. (1987) "Behavioral assessment: a new theoretical foundation for clinical measurement and evaluation", in H.J. Eysenck and I. Martin (eds.), Theoretical Foundations of Behavior Therapy, pp.331-350. New York: Plenum Press.
- EVERS, H.K. (1981) "Tender loving care? - patients and nurses in geriatric wards", in L.A. Copps (ed.), Care of the Aging: Recent Advances in Nursing, pp.46-74. Edinburgh: Churchill Livingstone.
- FALCO, S.M. and LOBO, M.L. (1985) "Martha E. Rogers", in J.B. George (ed.), Nursing Theories: the Base for Clinical Practice, 2nd edn., pp.214-234. Englewood, New Jersey: Prentice-Hall.
- FAWCETT, J. (1984) Analysis and Evaluation of Conceptual Models of Nursing. Philadelphia: F.A. Davis.
- FEINSTEIN, A.R. (1970) "What kind of basic science for clinical medicine?" New England Journal of Medicine, 283(16) 847-853.
- FENELEY, R.C.L. (1980) "Normal micturition and its control", in D. Mandelstam (ed.) Incontinence and its Management, pp.36-52. London: Croom Helm.
- FENTON, M.V. (1987) "Development of a scale of humanistic nursing behaviours", Nursing Research, 36(2):82-87.
- FERM, L. (1974) "Behavioural activities in demented geriatric patients", Gerontologica Clinica, 16:185-194.
- FITZPATRICK, J. and WHALL, A. (1983) Conceptual Models of Nursing. Analysis and Application. Bowie, Maryland: Robt. J. Brady Co.
- FLASKERUD, J.H. and HALLORAN, E.J. (1980) "Areas of agreement in nursing theory development", Advances in Nursing Science, 2(1):1-7.

- FLASKERUD, J., HALLORAN, E., JANKEN, J., LUND, M. and ZETTERLUND, J. (1979) "Avoidance and distancing: a descriptive view of nursing", Nursing Forum, 18:158-174.
- FOLSTEIN, M.F., FOLSTEIN, S.E. and MCHUGH, P.R. (1975) "Mini-mental state: a practical method for grading of patients for the clinician", Journal of Psychiatric Research, 12:189-198.
- FOX, D.J. (1982) Fundamentals of Nursing Research, 4th edn. Connecticut: Appleton-Century-Crofts.
- FRASER, M. (1987) Dementia and its Management. Chichester: John Wiley & Sons.
- FREWEN, W.K. (1984) "The significance of the psychosomatic factor in urge incontinence", British Journal of Urology, 56:330.
- GEBBIE, K.M. and LAVIN, M.A. (eds.) (1975) Classification of Nursing Diagnosis. St. Louis: C.V. Mosby Co.
- GILBERT, B.B. (1970) British Social Policy: 1914-39. London: Batsford.
- GILL, J. (1982) "Research as action: an experiment in utilising the social sciences", Personnel Review, 11(2):25-35.
- GILLEARD, C.J. (1979) "An investigation into the nature of behavioural change in the dementias of old age". Unpublished Ph.D. thesis, University of York.
- GILLEARD, C.J. (1980) "Prevalence of incontinence in local authority homes for the elderly", Health Bulletin, 38(6):236-238.
- GILLEARD, C.J. (1981) "Incontinence in the hospitalised elderly", Health Bulletin 39(1):58-61.
- GILLEARD, C.J. (1984a) "Assessment of cognitive impairment in the elderly: a review", in I. Hanley and J. Hodge (eds.), Psychological Approaches to Care of the Elderly, pp.1-21. London: Croom Helm.
- GILLEARD, C.J. (1984b) "Assessment of behavioural impairment in the elderly: a review", in I. Hanley and J. Hodge (eds.), Psychological Approaches to Care of the Elderly, pp.41-60. London: Croom Helm.
- GILLEARD, C.J. and PATTIE, A.H. (1979) Manual for the Clifton Assessment Procedures for the Elderly (CAPE). Sevenoaks: Hodder and Stoughton.
- GILLEARD, C.J., PATTIE, A.H. and DEARMAN, G. (1980) "Behavioural disabilities in psychogeriatric patients and residents of old people's homes", Journal of Epidemiology and Community Health, 34:106-110.

- GILLEARD, C.J. and RIORDAN, W.I. and MITCHELL, R.G. (1981) "Ward orientation training with psychogeriatric patients", Journal of Advanced Nursing, 6:95-98.
- GILMORE, A.J.J. (1977) "Brain failure at home", Age and Ageing (Supp.) 6:56-60.
- GODDARD, H. (1953) The Work of Nurses in Hospital Wards, Report of a Job Analysis. Oxford: The Nuffield Provincial Hospital Trust.
- GOLDFARB, A.L., FISCH, M. and GERBER, I. (1966) "Predictors of mortality in the institutionalised elderly", Diseases of the Nervous System, 27:21-29.
- GOROWITZ, S. and MACINTYRE, A. (1976) "Toward a theory of medical fallibility", Journal of Medicine and Philosophy, 1(1):51-71.
- GRANGER, W., SHERWOOD, C.C. and GREER, D.S. (1977) "Functional status measures in a comprehensive stroke program", Archives of Physical Medicine and Rehabilitation, 58:555-561.
- GRESHAM, G.E., PHILLIPS, T.L.F. and LABI, M.L.C. (1980) "ADL status in stroke: relative merits of three indexes", Archives of Physical Medicine and Rehabilitation, 61:355-358.
- GRIFFIN, A.P. (1980) "Philosophy and nursing", Journal of Advanced Nursing, 5:261-272.
- GROSICKI, J.P. (1968) "Effect of operant conditioning on modification of incontinence in neuro-psychiatric geriatric patients", Nursing Research 17(4):304-311.
- GRUER, R. (1975) Needs of the Elderly in the Scottish Borders. Report prepared for Scottish Home and Health Department, Edinburgh.
- GURLAND, B. (1980) "The assessment of mental status of older adults", in J. Birren and R.B. Sloane (eds.), Handbook of Mental Health and Ageing, pp.671-700. Englewood Cliffs, New Jersey: Prentice-Hall.
- HALL, L.E. (1964) "Nursing - what is it?" Canadian Nurse, 60:150-154.
- HALL, M. (1979) "Treatment of the uninhibited bladder", Nursing Times, October 18th, 1806-1808.
- HALLAM, R.S. (1987) "Prospects for theoretical progress in behaviour therapy", in H.J. Eysenck and I. Martin (eds.), Theoretical Foundations of Behaviour Therapy, pp.315-330. New York: Plenum Press.
- HANLEY, I. and HODGE, J. (eds.) (1984) Psychological Approaches to Care of the Elderly. London: Croom Helm.

- HARDY, M.E. (1974) "Theories: component, development, evaluation", Nursing Research, 23:100-107.
- HEALTH ADVISORY SERVICE (1987) Annual Report, June 1987. Sutton, Surrey: NHS Advisory Service.
- HEALTH IN SCOTLAND (1984) Annual Report by Chief Scientist's Office. Edinburgh: Scottish Home and Health Department.
- HEALTH IN SCOTLAND (1985) Annual Report by Chief Scientist's Office. Edinburgh: Scottish Home and Health Department.
- HEGEL, G.W. (1964) The Phenomenology of Mind (J.B. Baillie, (trans./ed.)). London: Allen and Unwin.
- HENDERSON, V. (1966) The Nature of Nursing: a Definition and Its Implications, Practice, Research and Education. New York: Macmillan Co.
- HENSCHKE, P. (1987) "Alzheimer's disease: aetiology", in B. Pitt (ed.), Dementia, pp.109-117. Edinburgh: Churchill Livingstone.
- HERSEN, M. and BARLOW, D. (1976) Single Case Design. New York: Academic Press.
- HILGARD, E.R. and ATKINSON, R.C. (1967) Introduction to Psychology, 4th edn. New York: Harcourt, Brace and World Inc.
- HILTON, P. (1987) "Clinical algorithms: urinary incontinence in women", British Medical Journal, 295:426-432.
- HILTON, P. and STANTON, S.L. (1981) "Algorithmic method for assessing urinary incontinence in elderly women", British Medical Journal, 282:940-942.
- HOBMAN, D. (ed.) (1981) The Impact of Ageing: Strategies for Care. London: Croom Helm.
- HODGE, J. (1984) "Towards a behavioural analysis of dementia", in Ian Hanley and J. Hodge (eds.) Psychological Approaches to the Care of the Elderly, pp.61-87. London: Croom Helm.
- HOLDEN, V. and WOODS, R. (1982) Reality Orientation: Psychological Approaches to the Confused Elderly. Edinburgh: Churchill Livingstone.
- HOLM, K. (1983) "Single subject research", Nursing Research, 32(4):253-255.
- HOOD, N.A. (1976) "Urinary incontinence", Health Bulletin, 354-359.
- HOOD, N.A. (1981) Urodynamic Studies in a Geriatric Population. Unpublished report prepared for Scottish Home and Health Department.

- HOOTON, M. (1987) "The relationship of knowledge to primary nursing", Nursing Quebec, 7(3):55, 56, 75.
- HORN, J.L. and DONALDSON, G. (1976) "On the myth of intellectual decline in old age", American Psychologist, 31:701-719.
- HUNT, J. (1988) "Primary nursing: the next challenge", Nursing Times, 84(49):36-38.
- HUSSIAN, R. (1981) Geriatric Psychology: a Behavioral Perspective. New York: Van Nostrand Reinhold.
- INEICHEN, B. (1987) "Measuring the rising tide", British Journal of Psychology, 150:193-200.
- INTERNATIONAL CONTINENCE SOCIETY (1976) "First report on the standardisation of terminology of lower urinary tract function", British Journal of Urology, 48:39-42.
- INTERNATIONAL CONTINENCE SOCIETY (1981) "Fourth report on the standardisation of terminology of lower urinary tract function", British Journal of Urology, 53:333-335.
- ISAACS, B. (1974) "The management of urinary incontinence in the elderly". Paper given at symposium, Collaboration in Care, Scottish Health Centre, Edinburgh.
- ISAACS, B. (1979) "Management of urinary incontinence in departments of geriatric medicine", Health Trends, 11:42-44.
- ISAACS, B. and NEVILLE, Y. (1976) The Measurement of Need in Old People. Report prepared for Scottish Home and Health Department. Edinburgh: HMSO.
- ISAACS, B. and WALKEY, F.A. (1964) "A survey of incontinence in elderly hospital patients", Gerontologica Clinica, 6:367-376.
- ITTELSON, W.H. (1974) "Some issues facing a theory of environment and behavior", in Proshansky, H.M., Ittelson, W.H. and Rivlin, L.G. (eds.) Environmental Psychology: People and their Physical Settings. 2nd edn., pp.50-59. New York: Holt, Rinehart and Winston.
- JACOX, A.O. and WEBSTER, G. (1986) "Nursing theory", in L.W. Nicoll (ed.), Perspectives in Nursing Theory, pp.146-165. Boston: Little, Brown & Co.
- JEFFREY, D. and SAXBY, P. (1984) "Effective psychological care for the elderly", in I. Hanley and J. Hodge (eds.), Psychological Approaches to Care of the Elderly, pp.255-282. London: Croom Helm.
- JOHNSON, D. (1968) "Theory in nursing: borrowed and unique", Nursing Research, 17(3):206-209.

- JOHNSON, D.E. (1980) "The behavioral system model for nursing", in J.P. Riehl and C. Roy (eds.), Conceptual Models for Nursing, 2nd edn., pp.207-216. East Norwalk, Connecticut: Appleton-Century-Crofts.
- KAHANA, E. (1976) "Matching environments to needs of the aged: a conceptual scheme", in W. Gubrium (ed.), Late Life, pp.201-214. San Francisco: Jossey-Bass Inc.
- KANE, R. and KANE R. Assessing the Elderly. Lexington, Mass.: D.C. Heath & Co.
- KAPLAN, C.H. and GREENFIELD, S. (1978) "Using logic in evaluation of the processes of care", Quality Review Bulletin, January 3-8.
- KATES, R.W. and WOHLWILL, J.F. (1966) "Man's response to the physical environment", Journal of Social Issues, 22-28.
- KAUGEN, P.K. (1985) "Behaviour of patients with dementia", Danish Medical Bulletin, 35 (Supp. I), 62.
- KAY, D. (1989) Letter to British Journal of Psychiatry, p.121.
- KAY, D.W.K., BEAMISH, P. and ROTH, M. (1964) "Old age mental disorders in Newcastle-upon-Tyne", British Journal of Psychiatry, 110:146-158; 668-682.
- KENDRICK, D.C. (1982) "Why assess the aged? A clinical psychologist's view", British Journal of Clinical Psychology, 21:47-54.
- KENDRICK, D.C. (1987) "Psychological assessment", in B. Pitt (ed.), Dementia, pp.69-89. Edinburgh: Churchill Livingstone.
- KING, I. (1971) Toward a Theory for Nursing. New York: John Wiley & Sons Inc.
- KING, I.M. (1978) "The 'why' of theory development", in Theory Development: What, Why, How?, pp.79-94. New York: National League for Nursing.
- KINGS FUND CENTRE (1983) Action on Incontinence: Report of Working Group. London: Kings Fund Centre.
- KINNAIRD, J., BROTHERSTON, J. and WILLIAMSON, J. (1981) The Provision of Care for the Elderly. Edinburgh: Churchill Livingstone.
- KIRSCHEN, A.J. and CAPE, R.D.T. (1984) "A history of urinary incontinence", Journal of American Gerontological Society, 32: 686-688.
- KLAUSNER, S.J. (1973) "Life span environmental psychology: methodological issues", in P.B. Baltes and K.W. Schaie (eds.),

- Life Span Developmental Psychology, pp.71-94. New York: Academic Press.
- KLEEMEIER, R.W. (1959) "Behavior and the organisation of bodily and external environment", in J.E. Birren (ed.), Handbook of Aging and the Individual, pp.400-451. Chicago: University of Chicago Press.
- KLEEMEIER, R.W. (1961) (ed.) Aging and Leisure. New York: Oxford University Press.
- KRANE, R.J. and SIROKY, M.B. (1981) "Diagnosis and treatment of urinary incontinence", in C. Eisdorfer (ed.), Annual Review of Geriatrics and Gerontology, Vol. 2, pp.385-402. New York: Springer Pub.
- LABOUVIE-VIEF, G. (1982) "Growth and aging in life span perspective", Human Development, 25(1):65-78.
- LANGWORTHY, O.R., JARVIS, J.A. and LEWIS, L.G. (1937) "Incontinent patients in a chronic hospital", Southern Medical Journal, 3:969.
- LAUDAN, L. (1977) Progress and its Problems: Towards a Theory of Scientific Growth. Berkeley: University of California.
- LAWTON, M.P. (1975) "Competence, environmental press and the adaptation of older people", in P.G. Windley, T.O. Byert and P.G. Ernst (eds.), Theory Development in Environment and Aging, pp.27-39. Washington, D.C.: Gerontological Society.
- LAWTON, M.P. (1981) "Sensory deprivation and the effect of the environment on management of the patient with senile dementia clinical aspects of Alzheimer's disease", in N. Miller and G. Cohen (eds.), Aging, Vol. 15, pp.227-251. New York: Raven Press.
- LAWTON, M.P. (1982) "Competence, environmental press and the adaptation of older people", in M.P. Lawton, P.G. Windley and T.O. Byers (eds.), Aging and the Environment: Theoretical Approaches, pp.349-357. Springer: New York.
- LAWTON, M.P. (1983) "Environment and other determinants of well-being in older people", Gerontologist, 23(4):349-357.
- LAWTON, M.P. (1985) "The elderly in context: perspectives from environmental psychology", Environment and Behaviour, 17(4): 505-519.
- LAWTON, M.P. and NAHEMOW, L. (1973) "Ecology and the aging process", in C. Eisdorfer and M.P. Lawton (eds.), Psychology of Adult Development and Aging, pp.231-250. Washington, D.C.: American Psychiatry Association.

- LAZARUS, R.S. and DELONGIS, A. (1983) "Psychological stress and coping in ageing", American Psychologist, 38:245-254.
- LEONARD, M.K. (1985) "Myra Estrine Levine", in J.B. George (ed.), Nursing Theories: The Base for Clinical Practice, 2nd edn., pp.180-194. Englewood Cliffs: Prentice-Hall.
- LEVINE, M.E. (1967) "The four conservation principles of nursing", Nursing Forum, 6(1):45-49.
- LEVINE, M.E. (1973) Introduction to Clinical Nursing, 2nd edn. Philadelphia: F.A. Davis Co.
- LEWIN, K. (1935) A Dynamic Theory of Personality. New York: McGraw Hill.
- LIEBERMAN, M.A. (1975) "Adaptive processes in later life", in N. Datan and L. Ginberg (eds.), Life Span Developmental Psychology: Normative Life Crises, pp.135-142.
- LINDSLEY, O. (1964) "Geriatric behavioral prosthetics", in R. Kastenbaum (ed.), New Thoughts on Old Age, pp.41-60. New York: Springer.
- LIPOWSKI, Z.J. (1981) "Organic mental disorders: their history and classification, with special reference to DSM-III", in N.E. Miller and G.D. Cohen (eds.), Clinical Aspects of Alzheimer's Disease and Senile Dementia (Vol. 15: Aging), pp.37-45. New York: Raven Press.
- LIPPITT, R., WATSON, J. and WESLEY, B. (1958) The Dynamics of Planned Change. New York: Harcourt, Brace and World.
- LONG, M.L. (1985) "Incontinence: defining the nursing role", Journal of Gerontological Nursing, 11(1):30-41.
- LOWE, C.F., HORNE, P.J. and HIGSON, P.G. (1987) "Operant conditioning: the hiatus between theory and practice in clinical psychology", in H.J. Eysenck and I. Martin (eds.), Theoretical Foundations of Behaviour Therapy, pp.153-166. New York: Plenum Press.
- MCCORMICK, K.A. and BURGIO, K.L. (1985) "Incontinence: an update on nursing care measures", Journal of Gerontological Nursing, 10(10):17-23.
- MACDONALD, M. (1988) "Primary nursing: is it worth it?" Journal of Advanced Nursing, 13:797-806.
- MACFARLANE, J. (1976) "The role of research and the development of nursing theory", Journal of Advanced Nursing, 1(6):443-451.
- McHUGH, M. (1986) "Nursing process: musings on the method", Holistic Nursing Practice, 1(1):21-28.

- MACINTYRE, A. (1984) A Short History of Ethics. London: Routledge and Kegan Paul.
- McKEON, R. (1954) Thought, Action and Passion. Chicago: University of Chicago Press.
- McLAREN, S.M., McPHERSON, F.M. and BALLINGER, B.R. (1981) "Prevalence and severity of incontinence among hospitalised, female psychogeriatric patients", Health Bulletin, 39(3):157-162.
- MACLENNAN, W.J., BALLINGER, B.R., McHARG, A. and OGSTON, S.A. (1987) "Dementia and immobility", Age and Ageing, 16:1-9.
- MAHENDRA, B. (1987) Dementia: A Survey of the Syndrome of Dementia, 2nd edn. Lancaster: MTP Press Ltd.
- MANDELSTAM, I.D. (ed.) (1980) Incontinence and its Management. London: Croom Helm.
- MASLOW, A.H. (1970) Motivation and Personality, 2nd edn. New York: Harper Row.
- MASTERTON, G., HOLLOWAY, E.M. and TIMBURY, G.C. (1980a) "The behavioural characteristics of local authority home residents referred to a geriatric psychiatric service", Journal of Epidemiology and Community Health, 34:102-105.
- MASTERTON, G., HOLLOWAY, E.M. and TIMBURY, G.C. (1980b) "The prevalence of incontinence in local authority homes for the elderly", Health Bulletin, 32(2):62-64.
- MASTERTON, G., HOLLOWAY, E.M. and TIMBURY, G.C. (1981) "Role of local authority homes in the care of the dependent elderly", British Medical Journal, 283:523-524.
- MAULE, M., MILNE, J.S. and WILLIAMSON, J. (1984) "Mental illness and physical health in older people", Age and Ageing, 13:349-356.
- MEIER, P. and PUGH, E.J. (1986) "The case study: a viable approach to clinical research", Research in Nursing and Health, 9:195-202.
- MELEIS, A.I. (1985) Theoretical Nursing: Development and Progress. Philadelphia: J.B. Lippincott Co.
- MENZEL, H. (1978) "Meaning in context", in M. Brenner, P. Marsh and M. Brenner, The Social Context of Method, pp.140-171. London: Croom Helm.
- MERTON, R. (1957) Social Theory and Social Structure. Glencoe, Illinois: Free Press.
- MILLARD, P.H. (1979) "The promotion of continence", Health Trends, 11(1):27-28.

- MILLER, A.F. (1978) "Evaluation of the Care provided for Patients "with Dementia". Unpublished M.Sc. thesis, University of Manchester.
- MILLER, A. (1985) "The relationship between nursing theory and nursing practice", Journal of Advanced Nursing, 10:417-424.
- MILLER, E. (1977) Abnormal Ageing. London: John Wiley & Sons.
- MILLS, C.W. (1959) The Sociological Imagination. London: Penguin Books.
- MILNE, J. (1976) "Prevalence of incontinence in elderly age groups", in F.W. Willington (ed.), Incontinence in the Elderly, pp.9-21. London: Academic Press.
- MISHLER, E.G. (1979) "Meaning in context: is there any other kind?" Harvard Educational Review, 49(1):1-19.
- MOCCIA, P. (1985) "A further investigation of 'dialectical thinking' as a means of understanding systems-in-development: relevance to Roger's principles", Advanced Nursing Science, 7(4):33-38.
- MURRAY, H.A. (1938) Explorations in Personality. London: Oxford University Press.
- NEUGARTEN, B. (1975) Middle Age and Ageing. Chicago: University of Chicago Press.
- NEUMAN, B. (1980) "The Betty Neuman health-care system model", in J.P. Riehl and C. Roy (eds.), Conceptual Models for Nursing Practice, pp.127-131. East Norwalk, Connecticut: Appleton-Century-Crofts.
- NEWMAN, M. (1979) Theory Development in Nursing. Philadelphia, Pennsylvania: F.A. Davis Co.
- NEWCOMER, R.J. and BEXTON, E.G. (1978) "Ageing and the environment", in D. Hobman (ed.), The Social Challenge of Ageing, pp.73-116. London: Croom Helm.
- NICOLL, L.H. (ed.) (1986) Perspectives on Nursing Theory. Boston: Little, Brown & Co.
- NIGHTINGALE, F. [1859] (1974) Notes on Nursing. London: Blackie.
- NORDENFELT, L. (1986) "Health and disease: two philosophical perspectives", Journal of Epidemiology and Community Health, 41: 281-284.
- NORRIS, C. (1982) Concept Clarification in Nursing. Rockville: Aspen Systems Corp.

- NORTON, D., McLAREN, R. and EXTON-SMITH, A.N. (1962) An Investigation of Geriatric Nursing Problems in Hospital. London: National Corporation for the Care of the People.
- NOVAK, M. (1979) "Thinking about ageing: a critique of liberal social gerontology", Age and Ageing, 8(4):209-215.
- O'CONNOR, K. (1987) "A response model of behavior", in H.J. Eysenck and I. Martin (eds.), Theoretical Foundations of Behavior Therapy, pp.353-378. New York: Plenum Press.
- OREM, D. (1971) Nursing: Concepts of Practice. New York: McGraw Hill Book Co.
- ORLANDO, I. (1961) The Dynamic Nurse-Patient Relationship. New York: G.P. Putnam & Sons.
- OUSLANDER, J.G. and KANE, R.L. (1984) "The costs of urinary incontinence in nursing homes", Medical Care, 22(1):69-79.
- OUSLANDER, J.G., BLAUSTEIN, J., CONNOR, A. and PITT, A. (1988) "Habit training and oxybutynin for incontinence in nursing home patients: a placebo controlled trial", Journal of the American Geriatrics Society, 36:40-46.
- OUSLANDER, J.G., KANE, R.L. and ABRASS, I.B. (1982) "Urinary incontinence in elderly nursing home patients", Journal of the American Medical Association, 248(10):1194-1199.
- OUSLANDER, J., STASKIN, D., RAZ, S., SU H-L and HEPPS, K. (1987) "Clinician vs. urodynamic diagnosis in an incontinent geriatric female population", Journal of Urology, 137:68-71.
- OUSLANDER, J.G., UMAN, G.C., URMAN, H.N. and RUBINSTEIN, L.Z. (1987) "Incontinence among nursing home patients: clinical and functional correlates", Journal of the American Gerontological Society, 35:324-330.
- OVERTON, W.F. and REESE, H.W. (1970) "Models of development: methodological implications", in L.R. Goulet and P.B. Baltes (eds.) Life-span Developmental Psychology: Theory and Research. New York: Academic Press.
- OVERTON, P., SCHNECK, R. and HAZLETT, C.B. (1977) "An empirical study of the technology of nursing subunits", Administrative Science Quarterly, 22 (June) 203-219.
- PALMORE, E., CLEVELAND, W.P., NOWLIN, J.B., RAMM, D. and SIEGLER, I.C. (1979) "Stress and adaptation in later life", Journal of Gerontology, 34:841-851.
- PANNILL, F.C. (1987) "Urinary incontinence", Editorial, Journal of the American Gerontological Society, 880-881.

- PARKER, R. (1981) "Tending and social policy: a new look at the personal social services", in E.M. Goldberg and S. Hatch (eds.), Discussion Paper, No. 4, pp.96-110. Policy Studies Institute, London.
- PARR, J. (1980) "The interaction of persons and living environments", in L.W. Poon (ed.), Aging in the 1980s: Psychological Issues, pp.393-406. Washington: American Psychological Association.
- PARSE, R.R. (1981) Man - Living - Health. New York: John Wiley.
- PATERSON, J. and ZDERAD, L. (1976) Humanistic Nursing. New York: John Wiley & Sons Inc.
- PATTIE, A.H. and GILLEARD, C. (1978) "Admission and adjustment of residents in homes for the elderly", Journal of Epidemiology and Community Health, 32:212-214.
- PEMBREY, S. (1978) "The role of the ward sister in the management of nursing". Unpublished Ph.D. thesis, University of Edinburgh.
- PEPLAU, H.E. (1952) Interpersonal Relations in Nursing. New York: G.P. Putnam & Sons.
- PEPLAU, H. (1986) "Comments on early theory development", in L.H. Nicoll (ed.), Perspectives on Nursing Theory, p.108. Boston: Little, Brown & Co.
- PERALA, M.L. (1988) "Interaction in primary nursing", Nursing Times, Short Reports, 84(49):49.
- PERROW, C. (1967) "A framework for comparative analysis of organisations", American Sociological Review, 32:194-208.
- PERRY, E.K., TOMLINSON, B.E., BLESSED, G., BERGMANN, K., GIBSON, P.H. and PERRY, R.H. (1978) "Correlation of cholinergic abnormalities with senile plaques and mental test scores in senile dementia", British Medical Journal, 2:1457-1459.
- PIEPER, B. (1983) in J. Fitzpatrick and A. Whall (eds.), Conceptual Models of Nursing, pp.101-105. Bowie, Maryland: Robt. J. Brady Co.
- POLLOCK, D.D. and LIBERMAN, R.P. (1974) "Behaviour therapy of incontinence in demented in-patients", Gerontologist, 14:488-491.
- PROSHANSKY, H.M., ITTELSON, W.H. and RIVLIN, L.G. (1976) Environmental People and their Physical Settings. 2nd edn. New York: Holt, Rinehart and Winston.
- RAMPHAL, M. (1987) "Urinary incontinence among nursing home patients: issues in research", Geriatric Nursing, September/October, 249-254.

- REBOK, G. and HOYER, W.J. (1977) "The functional context of elderly behaviour", Gerontologist, 17(1):27-34.
- REED, P. (1983) "Implications of the life span developmental framework for wellbeing in adulthood and aging", Advances in Nursing Science, 3:19-25.
- REESE, H.W. and OVERTON, W.F. (1980) "Models, methods and ethics of intervention", in J.R. Nesselroade and H.W. Reese (eds.), Life Span Developmental Psychology: Intervention, pp.195-217. New York: Academic Press.
- REGISTRAR GENERAL OF SCOTLAND (1988) Population Projections Scotland (1985 based). Government Statistical Service.
- REID, E.A. (1975) "Incontinence and nursing practice: an investigation of the nursing management of soiling in non-bedfast patients". Unpublished M.Phil. thesis, University of Edinburgh.
- REPPUCCI, N.D. and SAUNDERS, J.T. (1974) "Social psychology of behavior modification: problems of implementation in natural settings", American Psychologist, Sept., 649-660.
- RIEGEL, K. (1976) "The dialectics of human development", American Psychologist, Oct., 689-699.
- RIEHL, J.C. and ROY, C. (eds.) (1980) Conceptual Models for Nursing Practice, 2nd edn. New York: Appleton-Century-Crofts.
- RISLEY, T.R. and WOLF, M.M. (1973) "Strategies for analysing behavioural change over time", in J.R. Nesselroade and H.W. Reese (eds.), Life Span Developmental Psychology: Intervention, pp.175-183. New York: Academic Press.
- RITCH, A.E.S., CASTLEDEN, E.M. and GEORGE, C.F. (1977) "A second look at emepromium bromide in urinary incontinence", Lancet, 1:504-507.
- ROBB, S.C., STEGMAN, C. and WOLANIN, M.O. (1986) "No research versus research with compromised results", Nursing Research, 35(2):113-116.
- ROGERS, M.E. (1970) The Theoretical Basis of Nursing. Philadelphia: F.A. Davis Co.
- ROGERS, M.E. (1980) "Nursing: a science of unitary man", in Riehl, J.P. and Roy, C. (eds.), Conceptual Models for Nursing Practice, 2nd edn., pp.219-228. New York: Appleton-Century-Crofts.
- ROPER, N., LOGAN, W.W. and TIERNEY, A.J. (1980) The Elements of Nursing. Edinburgh: Churchill Livingstone.
- ROSENOW, A.M. (1983) "Professional nursing practice in the bureaucratic hospital - revisited", Nursing Outlook, 31(1):34-39.

- ROTH, M. (1955) "The natural history of mental disorder in old age", Journal of Mental Science, **101**:281-301.
- ROTH, M. (1985) "Some strategies for tackling the problems of senile dementia and related disorders within the next decade", Danish Medical Bulletin, **32** (Supp. I), 92-111.
- ROY, C. (1971) "Adaptation: a conceptual framework for nursing", Nursing Outlook, **19**(4):254-257.
- ROY, C. (1981) Theory Construction in Nursing: An Adaptation Model. Englewood Cliffs, New Jersey: Prentice-Hall. Inc.
- ROYAL COLLEGE OF NURSING (1978) The Elderly: A Challenge to Nursing. London: Royal College of Nursing.
- ROYAL COLLEGE OF NURSING AND BRITISH GERIATRICS SOCIETY (1975) Improving Geriatric Care in Hospital: A Handbook of Guidelines. London: Royal College of Nursing.
- ROYAL COLLEGE OF PHYSICIANS (1981a) "Editorial", Journal of the Royal College of Physicians of London, **15**(3):142-156.
- ROYAL COLLEGE OF PHYSICIANS (1981) "Organic mental impairment in the elderly", Journal of the Royal College of Physicians of London, **15**:141-147.
- RUBIN, R. (1968) "A theory of clinical nursing", Nursing Research, **17**(3):210-212.
- RUSSELL, J.A. and WARD, L.M. (1982) "Environmental psychology", Annual Review Psychology, **33**:651-688.
- SALMON, U.J., WALTER, R.I. and GEIST, S.H. (1941) "The use of oestrogens in the treatment of urinary incontinence in post menopausal women", American Journal of Obstetrics and Gynecology, **42**:845.
- SANAVIO, E. (1981) "Toilet retraining psychogeriatric residents", Behaviour Modification, **5**(3):417-427.
- SCHAIE, K.W. and WILLIS, S.L. (1986) Adult Development and Aging. Boston: Little, Brown & Co.
- SCHEIDT, R.J. and SCHAIE, K.W. (1978) "A taxonomy of situations for an elderly population: generating situational criteria", Journal of Gerontology, **33**:848-857.
- SCHMIDT, J. (1977) "Availability", American Journal of Nursing, **72**(6):1087-1089.
- SCHNELLE, J.F., TRAUGHBER, B., MORGAN, D.B., EMBRY, J.E., BINION, A.F. and COLEMAN, A. (1983) "Management of geriatric

- incontinence in nursing homes", Journal of Applied Behaviour Analysis, 16:235-241.
- SCHNELLE, J.F., SOWELL, V.A., HU, T.W. and TRAUGHBER, B. (1988) "Reduction of urinary incontinence in nursing homes: does it reduce or increase costs?" Journal of American Geriatric Society, 36:34-39.
- SCHNELLE, J.F., TRAUGHBER, B., SOWELL, V.A., NEWMAN, D.R., PETRILLI, C.O. and ORY, M. (1989) "Prompted voiding treatment of urinary incontinence in nursing home patients", Journal of American Geriatric Society, 37:1051-1057.
- SCHON, D. (1983) The Reflective Practitioner: How Professionals think in Action. London: Temple Smith.
- SCHORR, A. (1987) "Behaviour modification", in H.J. Eysenck and I. Martin (eds.), Theoretical Foundations of Behavior Therapy, pp.37-56. New York: Plenum Press.
- SCHROCK, R.A. (1981) "An argument concerning the meaning and relevance of philosophical enquiries in nursing". Unpublished Ph.D. thesis, University of Edinburgh.
- SCHWARTZ, D. (1977) "Personal point of view - a report of seventeen elderly patients with a persistent problem of urinary incontinence", Health Bulletin, 35(4):197-203.
- SCOTTISH HOME AND HEALTH DEPARTMENT (1979) Changing Patterns of Care: Report on Services for the Elderly in Scotland. HMSO.
- SCOTTISH HOME AND HEALTH DEPARTMENT (1984) Health in Scotland. Report by Scottish Hospitals Advisory Service.
- SCOTTISH HOME AND HEALTH DEPARTMENT (1985) Health in Scotland. Report by Scottish Hospitals Advisory Service.
- SCOTTISH HOME AND HEALTH DEPARTMENT (1988) Scottish Health Authorities Review of Priorities for the Eighties and Nineties (SHARPEN). Report by Working Party of the Scottish Health Services Joint Planning Council.
- SCOTTISH NATIONAL NURSING AND MIDWIFERY CONSULTATIVE COMMITTEE (1976) "A new concept of nursing", Nursing Times, 72:49-60.
- SCOTTISH NATIONAL NURSING AND MIDWIFERY CONSULTATIVE COMMITTEE (1981) Nursing Times, 77:21-28.
- SHARMA, J.C. and MACLENNAN, W.J. (1988) "Causes of ataxia in patients attending a falls laboratory", Age and Ageing, 17(2):94-102.
- SHOTTER, J. (1978) "Towards a social psychology of everyday life: a standpoint in action", in M. Brenner, P. Marsh and M. Brenner

- (eds.), The Social Context of Methods, pp.33-43. London: Croom Helm.
- SIEGLER, I.C. and BOTWINICK, J. (1979) "A long term longitudinal study of the intellectual ability of older adults", Journal of Gerontology, **34**:242-248.
- SILVA, M.C. (1986) "Research testing nursing theory: state of the art", Advances in Nursing Science, **9**(1):1-11.
- SILVA, M.C. and ROTHBART, D. (1983) "An analysis of changing trends in philosophies of science on nursing theory development and testing", Advanced Nursing Science, **5**:1-14.
- SJOGREN, T., SJOGREN, H. and LINDGREN, A.G.H. (1952) "Morbus Alzheimer and morbus pick: generic, clinical and patho-anatomical study", Acta Psychiatrica Neurologica Scandinavica, **82**:1-152.
- SKINNER, B.F. (1953) Science and Human Behavior. New York: Macmillan.
- SKINNER, B.F. (1957) Verbal Behavior. New York: Appleton-Century-Crofts.
- SMITH, J.P. (1982) The Problem of Promoting Continence: an Account of 16 Regional Study Days convened by the Royal College of Nursing of the United Kingdom in Association with Squibb Surgicare Ltd. London: Royal College of Nursing.
- SPANGLER, P.F., RISLEY, T.R. and BILYEN, D.D. (1984) "The management of dehydration and incontinence in non-ambulatory geriatric patients", Journal of Applied Behaviour Analysis, **17**:397-401.
- STANTON, S.L. (1973) "A comparison of emepromium bromide and flavoxate hydrochloride in the treatment of urinary incontinence", Journal of Urology, **110**:529-531.
- STEVENS, B.J. (1979) Nursing Theory: Analysis, Application, Evaluation, 2nd edn. Boston: Little, Brown & Co.
- STILLWELL, J.A., HASSALL, C. and ROSE, S. (1984) "Changing demands made by senile dementia on the National Health Service", Journal of Epidemiology and Community Health, **38**:131-133.
- STOKOLS, D. (1978) "Environmental psychology", Annual Review Psychology, **29**:253-295.
- SUPPE, F. and JACOX, A.K. (1985) "Philosophy of science and the development of nursing theory:", Annual Review of Nursing Research, 243-262.

- SUTHERLAND, S.S. (1976) "The psychology of incontinence", in F. Willington (ed.), Urinary Incontinence, pp.52-69. London: Academic Press.
- TERI, L., LARSON, E.B. and RIEFLER, B.V. (1988) "Behavioral disturbance in dementia of the Alzheimer's type", Journal of the American Geriatrics Society, 36:1-6.
- THOMAS, T.T., PLYMAT, K.R., BLANNIN, J. and MEADE, T.W. (1980) "Prevalence of urinary incontinence", British Medical Journal, 281:1243-1245.
- THOMPSON, I. (1986) "Language and dementia", in P. Murdoch and J. Killeen (eds.), Dementia: Action on Training. A Report from Scottish Action on Dementia (mimeo).
- THOMPSON, J.L. (1985) "Meta theoretical concerns in nursing", Advances in Nursing Science 7(4):54-71.
- TIERNEY, A.J. (1973) "Toilet training", Nursing Times, Dec. 20-27, pp.43-46.
- TINKLE, M.B. and BEATON, J.L. (1983) "Toward a new view of science: implications for nursing research", Advances in Nursing Science, 5:27-36.
- TOBIN, S.S. and LIEBERMAN, M.A. (1976) Last Home for the Aged. San Francisco: Josey-Bass Inc.
- TOMLINSON, B.E., BLESSED, G. and ROTH, M. (1968) "Observations on the brains of non-demented old people", Journal of the Neurological Sciences, 7:331-356.
- TOMLINSON, B.E., BLESSED, G. and ROTH, M. (1972) "Observations on the brains of non-demented old people", Journal of the Neurological Sciences 11:205-242.
- TORRES, G. (1985) "Florence Nightingale", in J.B. George (ed.), Nursing Theories: the Base for Clinical Practice, 2nd edn., pp.34-49. Englewood, N.J.: Prentice-Hall Inc.
- TOULMIN, S. (1972) Human Understanding, Vol. 1. Oxford: Clarendon Press.
- TOULMIN, S. (1976) "On the nature of the physician's understanding", Journal of Medicine and Philosophy, 1(1):32-50.
- TOWNSEND, J. (1988) "Costs of incontinence", Community Medicine, 10(3):235-239.
- TRAVELBEE, J. (1971) Interpersonal aspects of Nursing. 2nd edn. Philadelphia: F.A. Davis Co.
- TURNER, R.K. (1980) "A behavioural approach to the management of incontinence in the elderly", in D. Mandelstam (ed.),

- Incontinence and its Management, pp.175-190. London: Croom Helm.
- U'REN, R. (1987) "Introduction", in B. Pitt (ed.), Dementia, pp.1-18. Edinburgh: Churchill Livingstone.
- VISINTAINER, M. (1986) "The nature of knowledge and theory in nursing", Image, 18(2):32-36.
- WADE, D.T. and HACHINSKI, V.C. (1987) "Multi infarct dementia" in B. Pitt (ed.) Dementia, pp.209-227. Edinburgh: Churchill Livingstone.
- WALD, F.S. and LEONARD, R.C. (1964) "Towards the development of practice theory", Nursing Research, 13:303-313.
- WALKER, L.O. (1977) "Toward a clearer understanding of the concept of nursing theory", Nursing Research, 20:428-435.
- WALTER, S. (1978) "Detrusor hyperreflexia in female urinary incontinence treated pharmacologically", Urology International, 33:316-319.
- WALTERS, S., HANSEN, J., HANSEN, L., MAEGAARD, E., MEYHOFF, H.H. and NORDLING, J. (1982) "Urinary incontinence in old age: controlled trial of emepromium bromide, British Journal of Urology, 54(3):249-252.
- WARD, K. (1968) Fifty Key Words in Philosophy. London: Lutterworth Press.
- WARREN, M.D. and KNIGHT, R. (1982) "Mortality in relation to the functional capacity of people with disabilities living at home", Journal of Epidemiology and Community Health, 36:220-223.
- WARTOFSKY, M. (1978) "Editorial", Journal of Medicine and Philosophy, 3(4):265-272.
- WATSON, A. and ANDERSON, J. (1987) "An estimate of the effects of relocation on elderly mentally frail patients", Health Bulletin, 45(1):20-24.
- WATSON, J. (1981) "Nursing's scientific quest", Nursing Outlook, 413-416.
- WEBB, C. (1981) "Classification and framing: a sociological analysis of task-centred nursing and the nursing process", Journal of Advanced Nursing, 6(5):369-376.
- WEBB, C. (1989) "Action research: philosophy, methods and personal experiences", Journal of Advanced Nursing, 14:403-410.
- WEIN, A.J. and RAEZER, D.M. (1979) "Physiology of micturition", in R.J. Krane and M.D. Siroky (eds.), Clinical Neuro-Urology, pp.1-34. Boston, Little, Brown & Co.

- WELLS, T.J. (1980) Problems in Geriatric Nursing Care: a Study of Nurses' Problems in the Care of Old People in Hospitals. Edinburgh: Churchill Livingstone.
- WHITMAN, S. and KURSH, E.D. (1988) "Curbing incontinence", Journal of Gerontological Nursing, 13(4):35.
- WHITTINGTON, L. (1980) "Bladder retraining", The Canadian Nurse, June, 26-29.
- WICKER, A.W. (1979) "Ecological psychology: some recent and prospective developments", American Psychologist, 34(9):755-765.
- WIEDENBACH, E. (1964) Clinical Nursing: The Helping Art. New York: Springer.
- WILKINS, D., MASHIAH, T. and JOLLEY, D. (1978) "Changes in the behavioural characteristics of elderly populations of local authority homes and long-stay hospital wards, 1976-77", British Medical Journal, 2:1274-1276.
- WILLEMS, E.P. (1974) "Behavioral technology and behavioral ecology", Journal of Applied Behaviour Analysis, 7:151-165.
- WILLEMS, E.P. (1979) "Behavioral ecology and experimental analysis: courtship is not enough", in J.R. Nesselroade and H.W. Reese (eds.), Life Span Developmental Psychology: Methodological Issues, pp.195-217. New York: Academic Press.
- WILLIAMS, M.A. (1988) "The physical environment of patient care", Annual Review of Nursing Research, 6:61-79.
- WILLIAMS, M.E. (1983) "A critical evaluation of the assessment technology of urinary incontinence in older persons", Journal of American Gerontological Society, 31(11):657-664.
- WILLIAMS, M.E. and PANNILL, F. (1982) "Urinary incontinence in the elderly", Annals of Internal Medicine, 97:895-907.
- WILLINGTON, F.L. (ed.) (1976) Incontinence in the Elderly. London: Academic Press.
- WILSON, L. and FITZPATRICK, J.J. (1984) "Dialectical thinking as a means of understanding systems in development: relevance to Rogers' principles", Advanced Nursing Science, 6(1):24-60.
- WILSON, T.S. (1948) "Incontinence of urine in the aged", Lancet, 374-377.
- WINDLEY, P.G. and SCHEIDT, R.J. (1980) "Person-environment dialectics: implications for competent functioning in old age", in L.W. Poon (ed.), Aging in the 1980's, pp.407-423. Washington: American Psychological Association.

- WOLANIN, M.O. and PHILLIPS, L.R.P. (1981) Confusion: Prevention and Care. St. Louis: C.V. Mosby Co.
- WOODS, R.T. and BRITTON, P.G. (1985) Clinical Psychology with the Elderly. London: Croom Helm.
- WORLD HEALTH ORGANISATION (1976) Summary Report of a Working Group on Nursing Aspects in the Care of the Elderly. Copenhagen: World Health Organisation Regional Office for Europe.
- WORLD HEALTH ORGANISATION EURO REPORT (1983) Medico Social Work and Nursing: the Changing Needs. Report on two WHO Meetings: Cologne Nov. 16-19, 1981; Helsinki, Sept. 1-4, 1981. Copenhagen: World Health Organisation Regional Office for Europe.
- WORLD HEALTH ORGANISATION (1980) International Classification of Impairments, Disabilities and Handicaps. Geneva: World Health Organisation.
- YARNELL, J.W.G. and St LEGER, A.S. (1979) "The prevalence, severity and factors associated with urinary incontinence in a random sample of the elderly", Age and Ageing, 8:81-85.
- YEATES, W.K. (1976) "Normal and abnormal bladder function", in F.L. Willington (ed.), Incontinence in the Elderly, pp.22-41. London: Academic Press.
- YIN, R.K. (1984) Case Study Research: Design and Methods. Beverly Hills: Sage Publications Inc.
- YU, L.C. (1986) "Incontinence stress index: measuring the psychological impact", Journal of Gerontological Nursing, 7:18-25.
- YU, L.C. and KALTREIDER, D.L. (1987) "Stressed nurses", Journal of Gerontological Nursing, 13(1):27-30.
- YU, L.C., ROHNER, T.J., KALTREIDER, L., HU, T-W, IG00, J.F. and DENNIS, P. (1990) "Profile of urinary incontinent women in long term care institutions", Journal of American Geriatrics Society, 38:433-439.
- ZANDER, K. (1985) "Second generation primary nursing", Journal of Nursing Administration, March, 18-24.

APPENDICES

- Appendix 1 Barthel Index
- Appendix 2 Information- Memory -Concentration Test
- Appendix 3 Orientation Index
- Appendix 4 Self - Toileting Chart
- Appendix 5 Incontinence Profile
- Appendix 6 Facsimile of Signs
- Appendix 7 Chart for survey of UI
- Appendix 8 Observation -question guide (for researcher)
- Appendix 9 Improving orientation (for home staff)
- Appendix 10 Urinary incontinence (for ward staff)
- Appendix 11 Changing the Organisation of Nursing
(for ward staff)

FUNCTIONAL ASSESSMENT PROFILEBARTHEL INDEX

Name _____ Date _____
Date of Birth _____ Ward _____
Number _____

<u>SELF CARE INDEX</u>	Can do without help	Can do with help from another	Cannot do
1. Drinking from a cup	(4)	(0)	(0)
2. Eating	(6)	(0)	(0)
3. Dressing upper body	(5)	(3)	(0)
4. Dressing lower body	(7)	(4)	(0)
5. Putting on brace or artificial limb	(0)	(-2)	(0) N/A
6. Grooming	(5)	(0)	(0)
7. Washing/Bathing	(6)	(0)	(0)

BARTHEL INDEX (Cont.)

	Can do without help	Can do with help from another	Cannot do
8. Controlling urination	(10)	(5)	0 Incontinent
9. Controlling bowel movements	(10)	(5)	0 Incontinent

MOBILITY INDEX

10. Getting in & out of a chair	(15)	(7)	(0)
11. Getting on & off toilet	(6)	(3)	(0)
12. Getting in or out of bath/shower	(1)	(0)	(0)
13. Walking yards on the level	(15)	(10)	(0)
14. Walking up/down one flight of stairs	(10)	(5)	(0)
15. Propelling/Pushing wheelchair	(5)	(0)	(0) N/A

Additional Comments

AIDS USED e.g. Zimmer, Spectacles, Hearing Aid

Vision

Normal Vision
Moderate Loss
Severe Loss
Total Blindness
N.D.

Hearing

Normal Hearing
Moderate
Severe
Total Deafness
N.D.

Communication

(Expressive)
Speaks & is understood
Speaks but is understood with difficulty
Uses symbols, board to communicate
Uses gestures only
Does not convey needs
N.D.
(Receptive)
Usually understands oral communication
Comprehension of oral communication limited
Understands by lip reading
written materials
sign language
Understands only simple gestures
Does not understand
N.D.

N.D. = Not Determined

Wandering/Getting Lost

Not a problem
Minimal
Moderate
Severe

INFORMATION-MEMORY-CONCENTRATION TEST

Information Test

Name	1
Age	1
Time (hour)	1
Time of day	1
Day of week	1
Date	1
Date	1
Month	1
Season	1
Year	1
Place name	1
Type of place	1
Recognition of two persons	2

—
—

Memory
(personal)

Date of birth	1
Place of birth	1
School attended	1
Occupation	1
Name of siblings/wife	1

INFORMATION-MEMORY-CONCENTRATION TEST (contd.)

(non-personal)

Date of World War I	1
Date of World War II	1
Name of monarch	1
Name of prime minister	1

Name and address (five-minute recall)

Mrs Jean Smith 5 Princes Street Edinburgh	5
---	---

—
—

Concentration

Months of year backwards	2	1	0
Counting 1-20	2	1	0
Counting 20-1	2	1	0

————
————

Total score	————
-------------	------

Possible score	33
----------------	----

Source: Blessed, G. et al. (1968), British Journal of Psychiatry,
114, 797-811.

ORIENTATION CHART

CONFIDENTIAL

NUMBER:

NAME:

HOME/WARD:

THIS RESIDENT CAN:

1. IDENTIFY HIS/HER BED AREA
2. IDENTIFY THE NEAREST TOILET
3. FIND HIS/HER WAY FROM BED AREA TO DAY AREA
4. IDENTIFY THE NEAREST TOILET
5. FIND HIS/HER WAY FROM DAY AREA TO DINING ROOM
6. IDENTIFY THE NEAREST TOILET
7. FIND WAY FROM DINING ROOM TO DAY AREA
8. IDENTIFY THE NEAREST TOILET
9. FIND WAY FROM DAY AREA TO BED AREA
10. IDENTIFY THE NEAREST TOILET

	SELF	WITH PROMPT	WITH ASSISTANCE

ASSESSMENT NUMBER:

NUMBER :

NAME :

HOME/WARD:

THIS RESIDENT

1. RECOGNISES THE URGE TO USE TOILET
2. GETS UP
3. IDENTIFIES THE DIRECTION OF THE TOILET
4. GOES TOWARD THE TOILET
5. ENTERS THE TOILET AREA
6. ENTERS THE TOILET CUBICLE
7. PULLS UP OUTER CLOTHING
8. PULLS DOWN UNDERWEAR
9. SITS ON TOILET
10. SITS ON TOILET UNTIL MICTURITION OCCURS
11. SITS ON TOILET UNTIL MICTURITION COMPLETE
12. REACHES FOR TOILET PAPER
13. CLEANSSES HERSELF
14. STANDS UP
15. PULLS UP UNDERWEAR
16. PULLS DOWN SKIRT
17. FLUSHES TOILET
18. LEAVES TOILET CUBICLE
19. GOES TO HAND BASIN
20. TURNS ON TAP
21. WASHES HANDS
22. TURNS OFF TAP
23. DRIES HANDS
24. LEAVES TOILET AREA
25. RETURNS TO DAY AREA

	SELF	WITH PROMPTING	WITH ASSISTANCE

ASSESSMENT NUMBER:

REINFORCER FOR APPROPRIATE BEHAVIOUR:

WHAT IS THE GOAL (SPECIFY BY NUMBER):

WARD/UNIT/HOME PROFILE

Name:

Home/Ward:

Number:

Characteristics	Information sought	General
<p>1. Temporal</p> <p>(a) Staff related</p> <p>(b) Patient/Resident Related</p>	<p>Time of duty shift</p> <p>Time of getting up</p> <p>Time of going to bed</p> <p>Time of meals:</p> <p>(a) breakfast</p> <p>(b) coffee</p> <p>(c) lunch</p> <p>(d) aft. tea</p> <p>(e) supper</p> <p>(f) night drink</p> <p>Time of toilet R.</p> <p>Time of drug R.</p>	
<p>2. Spatial</p>	<p>(a) <u>Distance from</u></p> <p>Day Room-toilet</p> <p>Bedroom-toilet</p> <p>D. Room-toilet</p> <p>(b) Signs ? Yes/No</p> <p>if Yes,</p> <p>Height</p> <p>Colour</p> <p>Size of Letters</p> <p>(Compared to DHSS Report)</p>	
<p>3. Organisational</p> <p>1. Average number on duty (shift)</p>	<p>Trained staff</p> <p>CRH</p> <p>HGN/SEN</p> <p>HMN</p> <p>SEN</p> <p>Care staff (Service in Years)</p> <p>Voluntary Helpers</p> <p>Key Workers</p> <p>Planned Care</p> <p>Communications</p>	

BASELINE OBSERVATIONS - Number of Observations/Day

Records Kept

1. Patient/Resident defined as incontinent

How? (for example) Slight
Occasional
Frequent
Usual

Number →

Any known cause/reason

2.1 Urinary

U.T.I.
Diagnosed
Treated
Checked

2.2 Bowel

Aperient

Yes
No
Usual
Occasional
As Required

2.3 Drugs

Diazepam

Diuretics Yes
No

Time How Long?

Chlorpromazine

Tranquilisers Yes
No

Propranolol

Cardiac Yes
No

T.C.D.

Phenyl Butazone

Blood Pressure Yes
No

Allopurinol

Other
Night Sedative

3.1 Fluid Intake

Restricted? Yes No

4.1 Mobility

Can (a) stand unaided
(b) walk unaided
(c) stand with one
(d) walk with one
(e) needs transport

5. Hearing (a) Assessed Yes
 (b) No
 (c) Hearing Aid Yes
 (d) No
6. Sight (a) Assessed Yes Blurry vision
 (b) No Distance
 (c) Specs Yes
 (d) No
7. Confused (a) Assessed Yes Crichton
 No Stockton
 Cape
- 8.1 Dyspraxia - e.g. Inability to dress properly, puts on clothes wrongly Yes
 No
- 8.2 Dysgnosia - Does not recognise everyday articles, e.g. toilet, commode Yes
 No
- 8.3 Disturbance of body image - Touch left/right buttock with right/left hand Yes
 No

INCONTINENCE PROFILE

(Nurse → Patient)

1. Physical Environment (Context V)

Where does the incontinence most commonly occur?

- (i) Bed area
- (ii) Day area
- (iii) Dining area
- (iv) Bathroom
- (v) Toilet
- (vi) Corridor

2. Activity (Process V)

When does the incontinence most commonly occur?

- (i) Sleeping
- (ii) Recreational
- (iii) Diversional
- (iv) Eating
- (v) Washing
- (vi) Wandering

3. Psychomotor (Process V)

How does the client react?

- (i) Posture/Position
 - (a) Upright
 - (b) Standing
 - (c) Sitting
 - (d) Slumped
- (ii) Expression (facial)
 - (a) Calm
 - (b) Agitated
 - (c) Apathetic
- (hands)
 - (a) Calm
 - (b) Restless
- (iii) Wandering
 - (a) Yes
 - (b) No

(iv) Other - Please specify.

T

E

L

L

O

T

Observation Guide (for researcher)

How many nurses ? What grades?

Nursing notes /planned care? Kardex? Is UI recorded as a problem?
 What kind of investigations, if any? Charting ? Toileting programme?

What aids/equipment : likes/dislikes

Use of signs : what type?

Toileting practices : rounds ? how many? queues? inappropriate voiding?
 what response to unforeseen requests? Are behavioural principles used?

Environment

spatial characteristics : which areas used most/least? When?

what causes changes in the use of space?

attributes of the ward/home : legibility/ comfort/privacy/density/
 sensory stimulation/control/sociality/
 accessibility.

use of behavioural therapies : RO; diversional therapy; reminiscence therapy,

context : what shapes the context of care? any programmes? by whom created?
 what effect of changes in the context on behaviour - patients?
 nurses? sleeping/eating/diversions?

does the environment change ? in what ways? what triggers?

Informal Interview

Tasks and duties:

How did you come to be working in this ward? Did you have a choice?

What do you think you have to know in order to work here?

Where/How did you learn about the work?

Were you shown/taught any special procedures?

How would you describe the work you do here?

How much similarity/differences in tasks/procedures with different patients?

Do you think you have learned anything new related to your work
 in the past six months?

How long do you think it would take a nurse new to the ward to learn the
 ropes?

(coded as role perception)

Do you find working here stressful? Why is this/not?

What creates the most pressure? How could this be helped?

Do you find anything causing conflicts between what you want to do and what you have to do?

(coded as conflict, stress)

What aspects of your work do you find most satisfying? Least?

How optimistic are you about the patients/residents?

(coded as satisfaction)

Is the care planned and documented in this ward?

What kinds of technical equipment is used? Who deals with the technical aspects of care?

Would you describe the care given as complex or simple?

Do you feel improvements in the patients' conditions depends more upon the care you give or upon medical care?

(coded as care planning)

How often do you need to call upon help from another nurse in this ward?
From another ward?

How much help do you get from people outwith the ward (PT; OT; district nurse?)

Are you ever sent to another ward to help out? How do you feel about this?

(coded as interdependency)

How many of the patients in this ward will go home?

Do you think the patients/residents have similar or different health problems?

What do you find more useful, a social or a medical history?

(coded as perceptions of patients)

How many patients/residents would you class as incontinent of urine?

How would you define this? Is any record kept? any investigation undertaken?

What is the distance to the nearest toilet from the (a) day area / (b) dining area/ (c) bed area?

Is any assessment of mobility made? of ability to find the toilet? of ability to use the toilet (a) alone, (b) with assistance from one, (c) assistance needed from two people.

What drugs have been prescribed, particularly diuretics?

What would you say was your biggest problem in relation to UI?
(coded as UI)

(for n/a)

what do you see as the differences between your work and that of the qualified staff?

(for RMN)

Are plans of care written out in this ward?

Do you think patients' physical or psychological needs are given most emphasis ? How do you feel about this?

Do you think your work involves complex judgements ? or is it fairly standard?

Do you think a nurse new to the ward would find it easy or difficult to understand what you are trying to do ?

What do you know/feel about the use of behavioural principles in working with the confused elderly ?

IMPROVING ORIENTATION

As you know several residents seem to have difficulty in finding the toilet. The purpose of the study is quite simple : to see whether posting large, vivid and easily read signs will make this easier. We are particularly interested to see whether this would help to reduce episodes of urinary incontinence.

The study itself has two stages. In the first stage (A) we need to know how often each of the four residents is incontinent of urine over the period of one week. We also need to know each resident's ability to find her way from (a) the bedroom, (b) the dining room and (c) the sitting room to the nearest toilet. In addition we need to know how competent the resident is in managing the series of tasks needed to use the toilet. These assessments will take place before the main part of the study begins. Following our discussions signs with the word TOILET in black letters on a red background will be placed at several key places after the assessments are made.

The intervention (stage B) consists of each resident, plus her key worker, taking a 'guided walk' every day for four weeks. The aim is to see whether residents can learn the route to the toilet and are able to use the toilet correctly. Finally, the signs are removed and the assessments repeated to see whether or not the walk has been memorised.

Thank you for your interest and help.

July, 1985.

Joan Anderson.

URINARY INCONTINENCE

Thank you for your help with the survey of urinary incontinence in the ward. The results can be seen on the noticeboard in the office. You will see that patients have been separated into 7 groups (7) according to the number of episodes of urinary incontinence

in the week of the survey :

group 1 - continent
group 2 - 1 - 5 episodes
group 3 - 6 - 10 episodes
group 4 - 11 - 15 episodes
group 5 - 16 - 20 episodes
group 6 - 21 - 25 episodes
group 7 - 26+ episodes

For the next phase we need to select four men who fall within the range of 11 - 20 episodes of urinary incontinence per week. These four men must be able to see, hear and walk, even with help.

During the next two weeks, while the patients are getting used to the annexe, we will continue to monitor and record all episodes of daytime urinary incontinence and of correct toilet use. This will form the baseline measurement (A) and it is against these measures that any changes will be assessed.

During the intervention stage (B), each patient will be offered a drink and if he would like to use the toilet hourly. Again, the recording of episodes of UI and of correct toilet use will continue. After some weeks we will be able to assess whether or not any changes in urinary incontinence have taken place.

If you have any queries, or want to know more, please ask. Thank you for your interest.

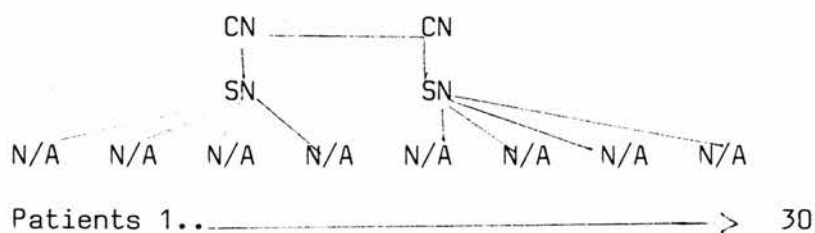
Joan Anderson,

Changing the Organisation of Nursing

Traditionally nursing has been carried out in a system in which one nurse carried out a certain task or tasks (giving baths; injection and so forth) for all or most of the patients in a ward. The result was that patients were nursed by a series of different nurses each carrying out a particular task. In recent years this system has been criticised for providing fragmented care, and one could assume that this kind of fragmentation is particularly bad for elderly, confused patients.

Primary nursing has been shown to give nurses greater satisfaction from their work. Primary nursing is a way of organising the delivery of nursing care in which the focus is the whole individual. It is a reflection of nurses' beliefs and values about the practice of nursing and about the people who are the recipients of care. To make such a shift requires that we examine our beliefs and practices before we can begin to alter the organisation of care.

At present the structure of the ward is:

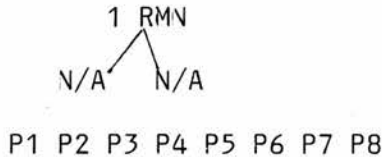


What is proposed is a modular scheme in which small groups of patients are totally cared for by one qualified nurse and two nursing assistant. The qualified nurse will plan and organise all the care required and will ensure that with the help of the nursing assistants, that the plans of nursing care are carried out. This could take several forms, and I would suggest that a scheme of four groups is tried to begin with.

Revised Scheme:

1 x 8 patients	1 x 8 patients	
1 x 7 patients	1 x 7 patients	total: 30 patients

This would then look like:



As you can see, this scheme serves to break down a mass of patients, and hopefully, you will get to know more about the smaller number of patients for whom you will be responsible. This is the key to primary nursing : the delivery of care from nurses who will assume responsibility and accountability for all aspects of the care.

Which patients go into which groups is for you to decide. You might think all the most mobile and self-caring patients should be in one group, in which case one nursing assistant could be released to give extra help with a module in which several patients need extra physical or psychological care. Alternatively, you might feel that each module should reflect patient characteristics and the patient mix within the ward. Some of you have special skills in dealing with aggression or disturbed patients while others are good at coping with eating difficulties. You may choose to structure the modules in this way, to give more opportunity to develop your special skills.

During the next few weeks Barbara and I will be using a system of primary nursing in the annexe where we will be looking at the care of the incontinent patient. Please feel able to come in and discuss anything about the project or about primary nursing.