CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

The study of dementia and related problems are comparably an area of recent origin with most of literature published in the last two decades. With the percentage of geriatric population around the world increasing in a rapid manner, problems associated with old age like dementia is naturally getting more attention from researchers. Accordingly the studies related to dementia and the associated factors like behavioural problems are consistently on the upward rise from later part of last decade. A detailed review of studies related to dementia shows that earlier studies were mostly on cognitive problems of dementia like memory loss which are the most prominent disturbances present in the early period of the disease. Later the focus of studies and reviews gradually extended to functional and behavioural changes associated with dementia. Hence in the very recent years of this decade studies on areas like behavioural problems are reported more frequently. Behavioural problem in dementia is a term used for different types of disturbances.

Behavioural problem is an umbrella term for which various terms are used. Various terminologies have been developed for the behavioural, psychological and psychiatric signs and symptoms of dementing disorders. For many patients memory and cognitive disorders prohibit adequate reporting of internal emotional states and observed behaviours are more easily reported by the carer or other observers. The terms usually used to describe these disturbances are behavioural problems,
behavioural disturbances, behavioural and psychological symptoms of dementia, Neuropsychiatric symptoms etc. (Finkel, Burns & Cohen, 2000; Mc Keith & Cummings, 2005; Cummings et al., 1994).

Alternative terminology is given in Diagnostic and Statistical Manual fourth revision (DSM IV, American Psychiatric Association 1994) in which dementia may be qualified as occurring with delirium, delusions or depressed mood and these symptoms can be associated as “behavioural disturbances”. Similarly in International Classification of Diseases (ICD) tenth revision dementia is qualified as occurring either “without additional symptoms”, “with predominantly delusional,” “with predominantly hallucinatory”, “with predominantly depressive” or “with mixed symptoms” (ICD 10, World Health Organisation, 1992).

According to Lawlon (2002) behavioural and psychological symptoms in dementia is an umbrella term that embraces a heterogeneous group of non cognitive symptoms that occur in people with dementia. The concept is a descriptive term and as such is not a diagnostic entity.

Behavioural problems are found to be the most distressing symptoms to the care giver both at home and in the nursing home. Many studies have shown that all behavioural problems are associated with care giver distress, but paranoia, aggression and sleep wake cycle disturbance appear to be particularly important (O’Donnell, Orachman & Barned, 1992).

Finkel (2001) defined behavioural disturbance as symptoms of disturbed perception, thought content, mood and behaviour frequently occurring in patients with dementia. Further it was stated that these
symptoms can be assessed by patient/relative interview and or by behavioural observation. Behavioural problems are very common and are among the most disturbing and difficult problems in dementia. Among the behavioural symptoms the most difficult and disturbing problems are delusions and hallucinations, depression, sleeplessness, anxiety, physical aggression, wandering and restlessness. Moderately common behavioural problems that can also be distressing include misidentifications, agitation, culturally inappropriate behaviour and sexual disinhibition. Other common problems include crying, cursing etc.

Hence it can be stated that behavioural problems are one of the most disturbing symptoms of dementia and the review of literature concerned with behavioural problems can be categorised under four sections which includes

- Prevalence of behavioural problems in dementia
- Types of behavioural problems
- Impact of behavioural problems
- Management of behavioural problems

2.2 Prevalence of behavioural problems in dementia

Prevalence denotes specifically to all current cases with a particular problem existing in a given period of time or over a period of time. Here prevalence of behavioural problems among dementia patients is reviewed.

Many studies have been done in the past which reported the prevalence of occurrence of the behavioural problems associated with dementia. Infact a review of literature related to behavioural problems in
dementia testified that largest number of studies are in the area of prevalence of behavioural problems in dementia. These prevalence studies are organized in a near chronological order to reflect the true nature of development of research in the area.

Reisberg et al. (1987) in a study of 57 Alzheimers patients reported that 58 percent of patients had significant behavioural symptomatology who did not significantly differ from those without behavioural symptomatology in either age or other such parameters. A significant observation was that women exhibited more behavioural symptoms. Among the symptoms, the most frequent symptoms were ‘people are stealing things’ (48%) and agitation of non specific nature (48%). Other most frequently noted symptoms included motor restlessness, violence, verbal outbursts and tearful episodes.

Schnell, Martin, Mendez, Smyth and Whitehouse (1990) in a study of behavioural symptoms of dementia using ‘Behavioural Pathology in Alzheimer’s Dementia Rating’ (BEHAVE AD) scale found that 38 percent of patients had hallucinations, 18 percent had psychiatric like symptoms, 50 percent had anxiety and 44 percent had activity disturbance.

Patterson and Bolger (1994) reported that as many as 50 percent of all dementia patients exhibit agitation, particularly in later stages of dementia. Paranoid delusions and hallucination may also be frequently present which can cause distress to patient and caregiver. Agitation refers to a range of behaviour disturbances including aggression, combativeness, shouting, hyperactivity and disinhibition.
Mc Shane and Hope (1996) in a longitudinal study of behaviour in dementia using a detailed semi structured interview reported that behavioural problems are common in demented persons. Findings of this study were used to define behavioural syndromes which appear and cluster together. Similar findings were reported by Jost and Grossberg (1996).

Mittleman, Ferris, Shulman, Steinberg and Levin (1996) in a randomized controlled trial found out that problems with patient behaviours were among the major problems faced by caregivers.

A study was conducted to establish whether robust behavioural syndromes can be identified from among the widely heterogenous behavioural changes which occur in dementia. Ninty seven elderly people with Alzheimer’s Dementia (AD) or Vascular Dementia (VD) was followed up for a period of four to eight months in a community setting. Three behavioural syndromes were identified a) over activity (walking more, walking aimlessly etc.) b) aggressive behaviour c) psychosis (persecutory ideas and hallucinations in the patients) (Hope, Keene, Fairburn, Mc Shane and Jacoby, 1997a).

In a prospective study of behaviour changes in dementia Hope et al. (1997b) found that there are few correlations between behaviour and age, gender and time since onset of dementia. Some type of behaviour were significantly more prevalent in those with gross cognitive impairment. Most distressing changes were aggressive behaviour, wandering, wakefulness at night, incontinence and persecutory ideas.
A study on physical and behavioural complex of dementia was conducted by Rosin (1997). Eighty one patients were studied over a period of three years and a comparison was made between various types of dementia. Nursing difficulties ranged from immobility of the patients on one hand to wandering on the other especially in Alzheimer’s group. Behaviour disturbances, shouting, incontinence and degenerate habits were found in a high proportion and the incidence of fractures reached 15 percent. Mainstay of management was simple occupational activity and an awareness by staff about the condition of client.

Gilley, Wilson, Becket and Evans (1997) studied the relationship of psychotic symptoms and subsequent physically aggressive behaviour in Alzheimer’s disease patients. In this study over a 52 weeks period multiple regression models were used to evaluate delusions and hallucinations, assessed at baseline as predictors of physical aggression, controlling for demographic and clinical variables. Of the 270 patients participated in the study, a total of 75 persons had one or more episodes of physical aggression during the 52 weeks period. The presence of delusions significantly predicted the presence and frequency of physical aggression. Among the patients who had high rates of physical aggression (more than one per month) 80 percent had delusions. This effect was robust, even after controlling for the effects of other clinical variables. By contrast, hallucinations did not reliably predict episode of physical aggression. It can be concluded that in the background of persecutory nature of most delusional ideations in Alzheimer’s Disease, delusions may be associated with distortions in the perception of threat in common social situations.
In an investigation to determine the prevalence and interrelationship between cognitive impairment and behavioural problems it was found that of the 6079 older people screened 38 percent (2219) were moderately or severely cognitively impaired and behavioural problems were present in 11.5 percent, most being associated with the presence of cognitive impairment (Jagger & Lindesay 1997).

McShane, Kenne, Fairburn, Jacoby and Hope (1998) reported that demented patients who experience psychotic symptoms early in the course of dementia are prone to develop behavioural problems later. In a study of 86 community dwelling subjects over a period of four years by administration of informant interview every four months, it was found that physical aggression was predicted by sad appearance and motor hyperactivity was predicted by persecutory ideas.

Stoppe, Brandt and Staedt (1999) studied the behavioural problems associated with dementia and reported that behavioural problems are a common feature of dementia especially in the later stages of the disease. The most frequent disorders are agitation, aggression, paranoid delusions, hallucinations, sleep disorders including nocturnal wandering, incontinence and vocalisation or screaming. Also it was reported that behavioural disorders rather than cognitive disorders are the most troubling problems which cause nursing home placement of patient imperative.

Richards and Hendrie (1999) reported that behavioural disturbance occur in upto 90 percent of patients with dementia. Behavioural problems especially agitation and wandering is associated with greater cognitive impairment. These are symptoms most likely to emerge during the course
of the disease. These two problems identified by families and care givers are the most troubling and is the most common reason for institutionalization. Other symptoms include delusions and hallucinations, depressive symptoms etc.

A prospective 10 year longitudinal study of dementia on 99 clients showed that verbal aggression is the most common and long lasting form of aggressive behaviour. Also it was found that aggressive resistance and physical aggression are most likely to persist until death. There are no correlation between any type of aggressive behaviour and age, gender or time since onset of dementia (Kenne et al., 1999).

In a study by Reisberg et al. (1987), it was found that 58 percent patients with Alzheimer’s disease had behavioural problems. Finkel (2001) found that 83 percent of demented patients had one or more of them. Lyketsos, Sheppard and Steinberg (2001) reported that overall 60 percent of patients had one or more of behavioural problems where as Srinivas (2002) reported prevalence of 83.87 percent.

Delusions are common in patients with dementia with as many as 73 percent of them develop it over the course of illness (Wragg & Jeste, 1989).

Hallucination have a lesser frequency range of 12 to 49 percent with an average of 28 percent (Schreinzer, 2005). Sunanda (2000) found hallucinations in 18 percent of the patients while Srinivas (2002) found the presence in 12.9 percent out of the total of 31 patients.
Agitation is more frequent behavioural problem with approximately 60 percent patients presenting with this symptom (Minitzer & Minitzer, 1996).

Ballard, Gray and Are (1999) reviewed literature on behavioural problems in dementia sufferers, examining frequency, course and association as well as treatment considerations. It was reported that behavioural problems are highly prevalent with a high impact on dementia sufferers and their carers. There is a paucity of studies especially controlled trials particularly in respect to non pharmacological interventions.

Shaji (2000) in a study of behavioural symptoms in dementia reported that these problems are very common and cause significant distress to patients and caregivers. Many times these problems were misinterpreted by relatives as ‘deliberate behaviour’ especially when the information and awareness regarding dementia is low. Simple non pharmacologic interventions like information and education to family members, giving support and guidance in managing patient etc. were found helpful.

Studies in dementia have shown that 70 to 90 percent of persons with dementia develop one or more behavioural problems. Infact behavioural disturbances in the context of dementia is the number one reason for admission in nursing home in the United States. Agitation and psychotic symptoms are the major behavioural symptoms that care givers were finding it very difficult to manage. Grossberg et al. (2000).
Review of various studies by Paulson, Solomon and Thai (2000) showed that the development of behavioural problems in dementia is associated with worse prognosis and more rapid rate of illness progression. It is also established that these symptoms adds significantly to the direct and indirect costs of care. Lawlon (2002) stated that behavioural and psychological symptoms are prominent manifestations in most cases of dementia.

In a study of emotional and behavioural symptoms of Alzheimer’s disease it was found that disruptive behaviours increased over a period of three years. Also individual differences in prevalence of behavioural problems showed significant stability over three years. (Lee & Strauss, 2000).

The relationship between behavioural problems in patients with dementia and changes in marital relationship was studied by De Vugt et al. (2006). Behavioural disturbance were assessed by Neuropsychiatric inventory. Regression analysis showed that patient’s behavioural problems were independent of patient’s cognitive status or functional impairment, but was associated with deterioration in the quality of the relationship between patient and caregiver. Patient apathy rather than depressive mood was associated with this deterioration. Apathy diminished the amount and reciprocity of interactions between partners. It was concluded that passive behaviour rather than excessive behaviour has most impact on the deterioration of the marital relationship. Hence intervention programmes should target relationship problems when problem behaviour especially apathy is present in patients with dementia.
Findings of a longitudinal study by Aalten, De Vugt, Jaspers, Jolles and Verhey (2005) on the course of a broad range of neuropsychiatric symptoms in dementia, prevalence, incidence and persistence of behavioural symptoms in 199 patients over a period of two years are highly interesting. Assessments using Neuropsychiatric Inventory (NPI) were carried out in every six months to evaluate behavioural problems. Nearly all patients (95%) developed one or more neuropsychiatric symptoms in the two year study period. Mood disorders were the most common problem. The severity of depression decreased whereas the severity of apathy and aberrant motor behaviours increased during follow up. The cumulative incidence was highest for hyperactive behaviour and apathy. Behavioural problems were persistent usually with apathy and aberrant motor behaviour being persistent for longer periods. But some symptoms were intermittent.

Reasons for institutionalization of dementia patients were studied by Thomas and Hugeman (2003) and reported that incontinence, withdrawal and other behavioural problems were major causes of institutionalizing a patient.

Kay (1994) reported that the prevalence of behavioural problems in dementia ranges between 75 to 98 percent in various studies of white patients and a very little is known about prevalence in non white patients.

In a study of behavioural symptoms by Ferri (2004) found that at least one behavioural problem was reported in 70.9 percent of 555 patients. This multicentred study was based on interview with caregivers. Of the behavioural problems depression (43.8%) was most common followed by anxiety (14.2%). All the behavioural problems predicted
caregiver strain. Also these symptoms were poorly understood and lead to shame and blame. This multicentred study in developing countries concluded that behavioural problems are common among people with dementia throughout the countries under study.

A study on 98 patients using Neuropsychiatric Inventory(NPI) showed that all patients had clinically significant scores on NPI with apathy, irritability and agitation being very common. Patients with stage two dementia on Clinical Dementia Rating scale (CDR) had significantly higher scores on total NPI. It was concluded that Neuropsychiatric disturbances in dementia appear to be universal with agitation, disinhibition and irritability being more frequent in later stages (Srikanth, 2005).

Steffens, Maytan, Helms and Plassman (2005) in a study using Neuropsychiatric Inventory investigated the prevalence of behavioral problems in dementia. The findings showed that behavioural symptoms are common, with approximately 3/4th of all patients (total n=321) exhibiting at least one symptom in the preceding month. Apathy (39.3%), agitation (31.8%) and aberrant motor behaviour (31.1%) were the most frequent symptoms. It was also reported that behavioural problems varied by severity of dementia.

Aalten (2005) studied the course of Neuropsychiatric symptoms and influence of several clinical variables on the course. Using the NeuroPsychiatric Inventory (NPI), 199 patients with dementia were assessed every six months for two years. Results showed that age sex and socioeconomic status were not associated with a specific neuropsychiatric symptom. Greater cognitive impairment was related to more severe
psychosis and the stage of dementia also influenced the course of behavioural problems.

Onega (2006) studied the psychoemotional and behavioral status in patients with dementia and reported that depression and behavioural symptoms in dementia can result in serious consequences. Issues related to these symptoms requires 1) implementation of effective psychogeriatric models of care 2) incorporating evidence based knowledge into practice setting.

A long term prospective study assessing the course of broad range of Neuropsychiatric symptoms in dementia reported the following. Nearly 95 percent of the 199 patients developed one or more Neuropsychiatric symptoms in the two year study period. Mood disorders were the most common problem. The cumulative incidence was highest for hyperactive behaviours and apathy. Apathy and aberrant motor behaviour was more persistent over longer periods. Generally behavioural problems are chronically present (Aalten, 2005).

Anand, Aggarwal, Dhikav, Gay and Hilal (2006) in a study of behavioural and psychologic symptoms in Alzheimer’s dementia found that 52.63 percent of patients presented with behavioural symptoms. Fourty five percent had psychic symptoms and anxiety/phobias were seen in 25 percent of patients. Also it was reported that care giver stress was higher in patients with behavioural problems.

Bachman (2006) reported that the behavioural and Neuropsychiatric symptoms of dementia and Alzheimer’s disease have become an increasingly important focus of clinical research and these symptoms pose a
tremendous challenge to families and caregivers. The late afternoon/evening exacerbation of symptoms have been called a sundowning behaviour. An improved understanding of complex relationship of behavioral problems are required to device better therapies in future.

In a study by the Alzheimer’s Disease Co-operative Study group it was reported that behavioural changes are common among patients with mild cognitive impairment. The predictive value of these changes shall be studied longitudinally to device primary prevention strategies (Cummings, 2006).

A review of study of behavioural and psychological symptoms of dementia in Taiwan showed that between 30 to 63 percent of patients experienced delusions. Hallucinations occurred less frequently which ranged from 21 to 26 percent. Anxiety occurred in 35 to 75 percent of patients, depression in 22 to 50 percent and sleep abnormalities occurred in 26 to 61 percent of patients (Fuh, 2006).

Prevalence of behavioural problems in a group of demented nursing home resident patients were studied by Zuidema, Van der Meer, Pennings and Koopmans (2006). This study found that of the 59 demented patients studied, 85 percent had behavioural problems. Tools used included Neuropsychiatric Inventory (NPI) and Cohen- Mansfield Agitation Inventory (CMAI). Of the symptoms agitation/aggression and apathy were present in almost 40 percent of the patients. Delusions, hallucinations, depression and anxiety were present in 10-15 percent of the patients. Cursing or verbal aggression, restlessness, complaining, negativism and mannerisms were prevalent in 30-50 percent of patients. It
was concluded that larger studies on the prevalence of problem behaviour and probably influencing factors are necessary.

Jeste, Meeks, Kim and Zubenko (2006) stated that behavioural problems in dementia represent a major health burden which are often distressing, impairing and costly than cognitive symptoms of dementia. New research in the field should encompass diverse populations around the globe.

In a study of neuropsychiatric symptoms in Alzheimer’s disease an attempt was made to describe the prevalence of the behavioural problems and the correlation of these symptoms with severity of cognitive deficits. The results showed that 78.33 percent of patients with Alzheimer’s disease had one or more psychiatric symptoms. Apathy (53.33%), depression (38.33%), sleep alterations (38.33%) and anxiety (25%) were the most prevalent symptoms. With reference to severity of dementia as measured in Clinical Dementia Rating scale (CDR), apathy was the main symptom that was significantly more in moderate and severe dementia (Tatsch, 2006).

In a clinical study by Chan (2007) 61.8 percent of dementia patients had at least one behavioural problem. The study consisted of 285 community dwelling patients.

Of the behavioural problems apathy, executive dysfunction and disinhibition were found to be predictive of care giver burden. Hence measures for managing these symptoms shall be devised in dementia intervention (Davis, 2007).
Using the Neuropsychiatric Inventory (NPI) frequency of Neuropsychiatric symptoms were studied by Srikanth (2005) and reported that more than 90 percent had clinically significant high scores in NPI.

The overall incidence of behavioural problem at sometime during the course of dementia was as high as 90 percent (Finkel, 2000).

In a community study of prevalence of behavioural problems in dementia Shaji, George, Prince and Jacob (2009) found that 96.6 percent of patients had one or more of behavioural problems. Paranoid and delusional ideations (65%) were the most frequently identified symptom category. Hallucinations and aggressiveness was present in 41 percent and 51 percent of the patients respectively.

The relationship between cognitive decline or stage of dementia and behavioural symptoms have been enquired by researchers. Levy et al. (1996b) reported that psychosis is associated with more rapid cognitive decline in Alzheimer’s disease patients and that agitation is related with more rapid functional deterioration. Behavioural problems like aggressive behaviour do not appear to be closely related with mental status in patients with Alzheimer’s disease.

Severity of neuropsychiatric symptoms and cognitive changes are weakly correlated with one another suggesting that they represent manifestations of distinct underlying pathophysiology. In Alzheimer’s disease cognitive symptoms reflect involvement of the hippocampus and posterior cortex (memory, language and visuospatial disturbances), where as regional correlates of behavioural symptoms are emphasized in the frontal and temporal cortex. However association between individual
cognitive symptoms and behavioural changes are limited. Many times behavioural disturbances may be prominent manifestation in mild cognitive impairment that commonly precedes Alzheimer’s disease (Wang, Joshi, Miller & Csernanky, 2001; Lyketsos et al.; 2002 Lopez, Jagust and Dekosky, 2003).

The comparative study of behavioural symptoms between different ages showed that compared with late onset dementia memory, orientation and inappropriate behaviours were more severe in early onset dementia than late onset dementia (Hori et al., 2005).

In a comparative study of behavioural problems during mild, moderate and severe stages of dementia by Shimabukuro, Awata and Matsuoka (2005) it was reported that symptoms like delusion, hallucination, agitation, dysphoria, anxiety and immobility are important problems in patients with mild, moderate and severe Alzheimer’s disease irrespective of stage or severity of dementia.

The review in this session reveals that behavioural problems are one of the highly prevalent group of problems in persons suffering from dementia, especially in Alzheimer’s Disease. Also many of these studies reported the relative occurrence of individual problems and also relationship of various factors like severity of cognitive decline to the development of behavioural problems. In the next session articles and studies that specifically discussed various types of behavioural problems and relative prevalence of individual problems are included.
2.3 Type of behavioural problems and individual prevalence of common behavioural problems

Types of behavioural problems or variety of disturbances present in persons with dementia ranges from aggression to apathy and delusions to hallucinations. The prevalence studies reviewed in the earlier section itself has reported the percentage of occurrence of individual problems. In this section an attempt is made to review the studies which focused mainly on prevalence of individual problems and types of problems present as behavioural problems.

Reisberg et al. (1987) who is a pioneering expert on studies of behavioural symptoms in dementia stated that the symptoms included delusional thinking, suspiciousness, hallucinations, agitation and verbal outbursts. Because these symptoms are a major cause of anxiety and concern for caregivers and a frequent cause of institutionalization, appropriate management of these symptoms are highly important.

Sunderland, Cumming and Christenson (1996) stated that symptoms associated with behavioural disturbances in patients with Alzheimer’s disease are essentially the same as those that would be manifested by patients with other dementias or with behavioural disturbance. These disturbances occur during all stages of Alzheimer’s disease and the caregiver of patient and the family are the best resources for diagnosis of behavioural disturbances.

The common behavioural problems associated with dementia include aggressiveness, violence, agitation, anxiety, apathy, disinhibition, suspiciousness, delusions, hallucinations, sleepiness, wandering etc. Also
patients may develop depression, withdrawal and lack of control. (Pendlebury & Solomon, 1996; Woods, 2001)

In a study by Levy et al. (1996b) it was reported that behavioural disturbances occur during all stages of Alzheimer’s dementia. Depression was seen in about 50 percent of patients, agitation in about 54 percent and psychiatric symptoms were seen in about 35 percentage of patients.

Hallucinations occur commonly in dementia. Whitehouse and Patterson (1996) reported in a large study that 15 percent of Alzheimer’s disease patients had auditory hallucinations and 12 percent had visual hallucinations. Some other studies suggest that hallucination predict more rapid rate of cognitive decline and increase the risk of aggressive behaviour (Gormley & Rizwan, 1998) while others failed to find such a relationship.

Common delusions in dementia include believes that people are stealing things which is experienced by 18-43 percentage of demented patients, that one is being abandoned is felt by 3-18 percentage and that spouse is unfaithful by 19 percentage. (Reisberg et al., 1986; Reisberg et al., 1987; Tarriot & Blazira, 1994; Reisberg & Ferris, 1996).

A study of 12 patients with dementia by Nagarathnam, Patel and Whelan (2003) found that verbal agitation in the form of screaming, shrieking, muttering are common in patients with dementia. Of the 12 patients in this study five displayed severe aggression and another five displayed mild to moderate levels of aggression. Four patients had delusions and hallucination while all but one had motor restlessness.
Delusional misidentification syndromes are a variant of behavioural disturbances affecting 30 percentage of patients. Both Capgras delusion and Fregoli delusions have been described in demented patients (Young & Leafhead, 1994). A ‘phantom boarder’ is the delusion that an intruder is living in one’s home, which is also reported by few patients in this study.

Delusions and hallucinations are found to be associated with worse outcome in Alzheimer’s disease as reported by Scarmeas, Brandt and Albert (2005) in a study of 456 persons with Alzheimer’s dementia. During this 14 year study, delusions were noted in 34 percent of patients at baseline and in 70 percent at final evaluation. The presence of delusion was associated with increased risk for functional decline. Hallucinations were present in seven percent of patients at initial visit and in 33 percent during other visits. Hence it was concluded that hallucinations and delusions are common in Alzheimer’s disease and presence of these problems predict functional and cognitive decline.

A study by Landes, Sperry and Strauss (2005) examined the relative frequency of depression, dysphasia and apathy in 132 research participants with possible Alzheimer’s disease. Apathy was more prevalent than dysphasia or major depression and was more strongly associated with global disease severity, cognitive impairment and functional deficits. According to the authors differentiation between apathy and depression is key to better management because often symptoms of depression and apathy overlap and confuse the caregiver.

Klozewska (1998) in a study conducted in Poland found that behavioural problems in Alzheimer’s disease were most commonly found
in global deterioration stages three to seven. The problems most commonly detected were delusions and hallucinations as also delusions with aggressive behaviour and hallucinations with anxiety.

Starkstein, Migliorelli, Teson and Petracca (1995) investigated the prevalence of affective states in Alzheimer’s disease. Of the 103 patients with Alzheimer’s disease 39 percent showed pathological affect, 25 percent showed crying episodes and 14 percent showed laughing or mixed episodes. Lyketsos, Steele and Baker (1997) also reported depression as a major behavioural problem associated with dementia.

In an Indian study of 20 dementia patients Biswas et al. (2005) reported that 25 percent had loss of basic emotions, 25 percent had inappropriate sexual behaviour with aggressiveness and wandering was observed in 15 percent of subjects.

In a study by Aalten (2006) it was reported that a higher level of awareness is associated with subsyndromal depression and anxiety, where as lack of awareness is associated with psychosis and apathy. Also it was reported that the level of awareness decreases as dementia progresses.

Schreinzer (2005) examined the occurrence of noncognitive behavioural and psychological symptoms and signs of dementia inorder to separate agitated and affective components of behavioural pathology. The presence of behavioral symptoms were evaluated with Behavioral pathology in Alzheimer’s Disease Rating Scale (BEHAVE-AD) and Cohen-Mansfield Agitation Inventory (CMAI). Factor analysis of BEHAVE-AD subscores was performed to create symptom clusters. Statistical analysis showed a significant correlation between severity of
dementia and BEHAVE-AD total score. Also a significant correlation between severity of dementia and CMAI score was noted. Factor analysis showed three symptom clusters/subsyndromes which included agitation, affective changes and day/night time disturbances.

Mc Keith and Cummings (2005) reported that the major behavioural disturbances in Alzheimer’s disease are apathy, agitation, depression, anxiety, irritability, delusion etc. Hallucinations and elation are less common. These findings are supported by conclusions of Mega, Cumming, Fiorello and Gombein (1996) and Lyketsos et al. (2001).

Various intensities of depression occur in 30 percent or more of patients with dementia (Alexopoulos & Abrams, 1991; Gottfries, 1997; Newman, 1999). Depression can be associated with significant morbidity, including isolation, reduced appetite and associated weight loss, sleep impairment, muscular reconditioning and low mobility and self care abilities. Depressive symptoms can be associated with constant requests for help, complaining and negativism (Kunik & Snow – Turek, 1999).

Apathy, the lack of passion, emotion or excitement and indifference to appeals, feelings or interest is one of the most common behavioural problem in Alzheimer’s dementia (Mega et al. 1996). According to researchers like Lindau and Almkvist (1998) lack of motivation is more common in Alzheimer’s disease than in other dementias. There is evidence that apathetic symptoms are troublesome and distressing to caregivers. The inability to get started can be one of the earliest symptoms of dementia and well informed caregivers can help the patient to initiate tasks that can be completed by patient himself/herself.
Anxiety is frequently observed in demented patients and may be associated with irritability, overt aggression, psychomotor agitation and pathological crying (Chemerinski and Petracca, 1998b). They also reported that behaviours such as pacing, chanting and repetitive tapping may reflect underlying anxiety. Refusal to allow necessary care such as bathing, dressing etc. may reflect acute situational anxiety and may respond to measures that decrease anxiety.

Aggression is a symptom complex that is likely to precipitate the most number of calls to the clinician from caregivers. Prospective studies show an association between aggression and the need for institutionalization (O’ Donnell, Orachman & Barned, 1992).

Aggressive symptoms can be divided into physically aggressive and verbally aggressive symptoms. (Cohen – Mansfield & Billing, 1996). Physically aggressive symptoms include hitting, pushing, grabbing, kicking, biting etc. Verbally aggressive symptoms include screaming, cursing, temper outbursts etc. Physical aggression is associated with more frequent delusions and more severe irritability (Chemerinski & Petracca, 1998b). Similar conclusions were reported by many other researchers (Koss, Weiner, Earenesto & Cohen – Mansfield, 1997; Aarsland, Cumming, Yenner & Miller, 1996).

According to Mc Minn and Draper (2005) vocally disruptive behavior in dementia includes screaming, abusive language, moaning, perseveration and repetitive and inappropriate requests. It is one of the most common challenging behaviour disturbance in dementia and there is lack of consensus on how to treat this disturbance. Effectiveness of
specific intervention is not empirically available at present and further research is required in this aspect.

Disinhibition is a syndrome associated with impulsive and inappropriate behaviour, emotional instability, poor insight and poor judgement. Symptoms include crying, euphoria, verbal aggression, physical aggression, self destructive behaviour, sexual disinhibition, intrusiveness, wandering, shoplifting, and other unrestrained behaviours (Haupt & Janner, 1998).

‘Wandering’ in dementia is a commonly presented problem. In a review by Lai and Arthur (2003) it was found that typical wandering was high in relatively young and more cognitively impaired. Effective interventions include medications, activity programmes, behavioural modification and environmental manipulations. Hughes and Louws (2002) reported that wandering is a common problem in dementia.

Vitello and Borson (2001) reported that sleep disturbance as one of the common problems seen in dementia which are similar to findings of Fuh (2006) who reported that sleep abnormalities occurred in about 26 to 61 percent of demented persons.

Eating disturbances were reported in 12 percent of clients with dementia (Blandford, Watkins, Mulvihill & Taylor, 1998). The eating disturbance can be either memory related or related to physical problems both of which are associated with dementia. Similar findings were reported by many researchers. (Norberg & Athlin, 1989; Sandman, Norberg, Adolfson, Eriksson & Nystrom,1990; Wolf-klein, Silverstone & Levy, 1992 ).
From the reviews detailed it can be concluded that common behavioural problems seen includes hallucinations, delusions, depression, aggression, anxiety, apathy disinhibition etc. Also it can be noted that prevalence of the individual problems reported in different studies vary widely and further detailed studies are required in this area.

2.4 Impact of behavioural problems

Few of the studies on prevalence of behavioural problems referred earlier in this chapter have also tried to study the impact or the consequences of behavioural problems on the patients, caregivers and family.

In this section the studies which have mainly focused on impact or consequences of these behavioural problems are included. This will definitely help in broadening the understanding of behavioural problems while emphasizing the need for the development of better management strategies.

Christensen (2000) reported that most influential factor in determining patient’s institutionalization is occurrence of behavioural disturbances. Similarly behavioural problems were reported as a major predictor of care giver burden by many researchers (Coen, Swanwick, O Boyle & Coakley, 1997; Nygaard, 1988).

A study by Donaldson, Tarrier and Burns (1998a, 1998b) reported that mood related behavioural problems, walking, sleep disruptions, hallucinations etc. has specific relationship to carer distress. Intervention strategies are required to identify and target troublesome behaviours that either change these behaviours or alter the way the carer respond to them.
A study by Coen, Boyle, Coakley and Lawlen (1999) reported that behaviour disturbance in particular is significant in carer burden causing much distress in carers of the demented.

A review of fourteen studies on burden of carers owing to behavioural problems in dementia showed that behavioural problems are one of the most important causes of burden in care givers (Garrido & Almeida, 1999).

Behavioural disturbances like agitation and wandering is associated with greater cognitive impairment, and is the problem most likely to emerge during the course of treatment. These symptoms are most troubling to families and caregivers and is most common reason for institutionalization in long term care facilities and referral to specialists (Devanand, 1997; Richards & Hendrie, 1999; Thomas et al., 2004 ). According to Rovener, Broadhead and Spencer (1989) depression is present in 86 percent of patients with Alzheimer’s dementia and comorbid depression is associated with greater cognitive impairment and greater level of disability. Combined together they lead to higher rates of institutionalization, mortality and functional impairment.

Presence of behavioural symptoms and impairment of activities of daily living are strongly associated. Activities of daily living involve complex planning which is dependent on frontal subcortical structures mediating the executive function. Behavioural problems are also mediated through this region which reflects the high correlation between the two aspects (Tekin, Fairbanks, O Conor, Rosenberg & Cumming, 2001).
Grigsby, Kaye and Robbins (1995) and Shaji (2000) stated that misinterpretation of behavioural and psychological symptoms of dementia as deliberate, purposeful etc. leads to care giver distress.

A multicentered study of behavioural and psychological symptoms of dementia in developing countries was conducted by Ferri (2004). In this study persons with dementia of mild and moderate type as defined by Clinical Dementia Rating scale were recruited together with their care giver from 21 centres in 17 developing countries. Care givers answered direct questions about behavioural symptoms of dementia and completed Zarit – Burden Interview. It was reported that care givers were more likely to report behavioural symptoms in dementia patients who were married, younger and better educated. More advanced dementia, presence of depression and anxiety were associated with behavioural symptoms. Behavioural symptoms predicted caregiver strain as behavioural symptoms are poorly understood and is associated with shame and blame. Similar findings were reported by many researchers (Levy et al., 1996a; Levy et al., 1996b; Shaji, 2000; Shaji, Smitha, Lal & Prince, 2003; Fauth, 2006; Shaji et al., 2009) some of which even found that many times care givers and relatives misinterpreted behavioural problems as deliberate misbehavior. Hence raising awareness about behavioural problems shall be the first step in management.

Behavioural symptoms and caregiver distress was studied by Mourik (2004). He reported that caregiver distress was strongest in relation to agitation and psychosis, followed by mood disturbances. Disinhibition and aberrant motor behaviour were mildly related to caregiver distress. Caregivers of patients living at home were more
distressed by behavioural problems than that of hospitalised patients. Similar findings were reported by many other studies (Nygaard, 1988; Grigsby, Kaye & Robbins, 1995).

Samus, Rosenblatt and Steele (2005) studied the Neuropsychiatric symptoms and its relationship with quality of life. It was reported that agitation, depression, apathy and irritability were significant predictors of quality of life and there was 29 percent variance. Fauth (2006) also reported similar findings regarding Neuropsychiatric symptoms.

Pinto (2006) studied behavioural and psychological symptoms of dementia in an Indian population. It was reported that behavioural problems occur in both Alzheimer’s and Vascular dementia but these problems are significantly higher and cause more distress in carers in Alzheimer’s dementia. Also it was concluded that behavioural symptoms in both Alzheimer’s dementia and vascular dementia exhibit specific longitudinal patterns. An understanding of the pattern can aid the treatment and can help in giving proper advice to caregivers regarding the course of illness and also can guide them in planning appropriate interventions.

Many studies have convincingly showed that the strongest predictor of burden and symptoms of depression or distress in carer is patient’s behavioural problems. eg: day/night time wandering, emotional outbursts and inappropriate behaviour (Sorensen, Duberstain, Gill and Pinguart, 2006).

A study by Davis (2007) investigated the contribution of behavioural problems on caregiver burden. He studied specifically the
impact of apathy, executive function and disinhibition on caregivers. It was concluded that these symptoms were predictive of caregiver burden and caregiver depression. Results argue for including strategies for managing the behavioural problems in dementia interventions.

De Vugt et al. (2006) in a study of impact of behavioural problems on spousal caregiver reported that apathy, depression and anxiety as being severely distressing for caregivers of demented patients. Another study by De Vugt et al. (2004) on behavioural disturbance and quality of marital relationship also reported similar findings.

Above reviews convincingly conclude that behavioural problems invariably lead to heavy caregiver distress by complicating the overall picture of dementia and by markedly reducing the ability of patient to meet even the activities of daily living. In general terms the behavioural problems worsens the condition of patient there by making it highly difficult for the caregiver to manage the person with dementia.

2.5 Management of behavioural problems.

Management of behavioural problems of the demented has been an area of high interest since many studies have identified the behavioural problems as the most distressing and difficult to manage symptoms of dementia.

Both pharmacological and nonpharmacological strategies have been tested and studied. Pharmacological treatment in elderly with dementia is often discouraged as being risky owing to the complications and side effects. Many times it is reported that pharmacological agents have further worsened the condition of the person either due to physical and
psychological side effects or consequences. Also low profile response to drugs have been found in many drug studies.

2.5.1. Pharmacological management

Borson and Raskind (1997) reviewed interpretable placebo controlled studies of psychopharmacologic approaches to the treatment of behavioural problems such as agitation and psychotic symptoms. He concluded that irrespective of modest efficiency adverse effects are common and severe.

Lehninger, Ravindran and Steward (1998) in a review of management strategies for problem behaviour in dementia concluded that given the less than favourable risk benefit ratio of most psychotropic drugs in population of older patients with dementia, the importance of nonpharmacologic strategies are more relevant and that it requires more detailed studies.

Mc Keith and Cummings (2005) reported that studies and review of studies of pharmacological interventions in behavioural problems of dementia show that antipsychotics, mood stabilizers, antidepressants, anxiolytics and sedative hypnotics are commonly used to manage these problems. But there have been few randomized placebo – controlled clinical trials of any psychotropic drugs in patients with dementia. Many recent systematic reviews showed that the evidence supporting the effectiveness of these components in the management of behavioural and psychological symptoms of dementia was limited (Sultzer, Gray, Guray, Berisford & Mahler, 1997; Devanand, Marder & Michaels, 1998; Sink, Holden & Yaffe, 2005). Maximum benefit shown in few studies were
only up to 20 percent improvement. Several studies of drugs have failed to show significant difference between drug and placebo effects of primary outcomes. Also studies have shown that the wide ranging side effects associated with these drugs along with high risk of complications like the two to three times increased risk of cerebrovascular accidents actively discourage the use of drug treatment (Gill, Rochon and Hemman, 2005; FDA, 2005; Ames et al., 2005).

According to Grossberg et al. (2000) the most efficacious general approach to behavioural abnormalities in dementia involves defining target symptoms, addressing environment factors, revisiting past and current medical illnesses, education of care givers, establishment of Neuropsychiatric diagnosis, application of targeted pharmacotherapy, use of behavioural management interventions and avoidance of toxicity. Behavioural management strategies in dementia should involve advance planning, consistent routines, simple choices, repetitions, reorientation, reminiscence, recognition of fears, education, distraction and refocusing. Shaping the behaviour with positive responses which can incorporate music, food and recreational activities are also found helpful.

Short review of pharmacologic therapy above show the high risk of adverse effects, low key response and only moderate efficacy in most of the drug trials. Hence alternative management strategies are actively sought for the better management of behavioural problems which include environmental modification, carer education, behavioural interventions etc. which is generally described under the term non pharmacologic management strategies.
2. 5.2. Non pharmacological management

According to Grossberg et al. (2000) the most efficacious general approach to behavioural abnormalities in dementia involves defining target symptoms, addressing environmental factors which involve advance planning, consistent routines, simple choices, repetition, recognition of fears, education distraction and refocusing.

According to Pendlebury and Solomon (1996) nonpharmacologic approaches to behavioural problems should be tried as the first line of treatment. For example treatment for depression may include encouraging simple activities (setting table, gardening, cleaning) or arranging comfortable social gathering and encouraging other physical activities etc. Keeping the patient active and awake during day with exercises/activity and avoiding afternoon naps can minimize wakefulness in night, and using a night light can prevent nocturnal confusion.

Wandering can be managed by having an identification bracelet, providing other outlets of energy and sound or motion detection devices for alerting caregivers are useful.

Agitation can be managed by providing a calm well structured and predictable environment. Also providing outlets for energy may help.

Identifying and eliminating cause of anxiety is the best treatment. For hallucinations and delusions avoiding confrontation and simple calm reassurance will usually help (Pendlebury & Solomon, 1996).

According to Richards and Hendrie (1999) effective treatment of behavioural manifestations of Alzheimer’s disease can improve quality of life for patients and their families. This also will decrease the caregiver
burden, decrease health care utilization and delay institutionalization of the demented person. Treatment also significantly decrease harm to the patient and their caretakers. Environmental manipulation or simple behavioural techniques are major approaches in non pharmacological treatment which shall be always the first line of management. Creating a safe and consistent environment with moderate stimulation, contrasting colours, pictures for directions and signs may be useful. A structured routine and consistent environment as free from changes as much as possible is of help in eliminating confusion. Additionally it may be desirable to provide familiar pictures and mementos as well as cues for orientation like calendar and clocks. Behavioural intervention such as validation and not correcting misstatements can ease anxiety. Stimulation oriented strategies like music and pet therapy and exercise are found helpful.

According to many clinical researchers (Doody, Steevens & Beck, 2001; Cohen-Mansfield, 2001; Magai, Cohen & Gomberg, 2002) management of dementia can include both non pharmacological and pharmacological approaches. Nonpharmacological interventions include behavioural therapies, systematic changes of the care environment, exercise and music.

In addition educational interventions for carers can help them to respond appropriately to emerging behavioural changes and to reduce problem escalation (Brodaty, Green & Koschera, 2003; Mittleman, Ferris, Shulman, Steinberg & Lewis, 1996). Family carers themselves may be affected by psychological distress, so appropriate interventions for carers’ depression, anxiety and substance abuse can reduce carer morbidity and
improve carer – patient relationships (Bullcok, 2004; Mittleman, Roth, Coon & Haley, 2004).

Bruce (2000) opined that behaviour disturbances are common among dementia patients. Management of these behavioural problems begins with assessment of psychiatric, medical and environmental etiologies. Treatment plans based on behavioural intervention can substantially reduce problematic behaviours.

According to Lawlon (2002) in the management of individuals with dementia at all stages of the illness, careful enquiry must be made regarding the presence of behavioural symptoms. The emphasis must be to detect behavioural problems before caregiver burn out and irretrievable damage to the support environment occur. Hence along with cognitive assessment and detailed collection of history during the initial phase, focus on behavioural assessment using standard tools shall be one of the first step in devising a management plan. Scales that can be used include BEHAVE-AD (Behavioural Pathology in Alzheimer’s Disease Rating scale (Reisberg et al.,1988) and Neuropsychiatric Inventory (NPI – Cummings et al. 1994). The characteristics of the behaviour or symptoms together with frequency, severity and impact on the patient and caregiver must be identified before formulating a targeted and tailored plan of management.

Commonly suggested non pharmacological approaches to management of behavioural problems include systematic changes of the care environment, behavioural therapies, exercise and music (Mittleman et al. 1996; Doody et al. 2001; Cohen – Mansfield, 2001; Magai et al., 2002; Brodatty, Green & Koschera, 2003). In addition educational
interventions for carer are highly important which can help them to respond appropriately to emerging behavioural changes and to reduce problem escalation. Family carer themselves can be affected by psychological distress, so appropriate intervention for carers are imperative (Bullock, 2004; Mittleman et al., 2004).

Mittleman et al. (1996) in a family intervention study reported that counselling sessions for the family could delay the worsening of behavioural problems which in turn considerably delays the nursing home placement of demented patients.

Ostwald, Hepburn and Cannon (1999) tested the effect of interdisciplinary psychoeducational family-group intervention in decreasing caregiver’s perceptions and the frequency and severity of behavioural problems in demented elderly. The study included 2 hour multimedia training sessions including education, family support and skills training. Intervention group showed decreased behaviour problems and diminished negative reactions to disruptive behaviour of the patients.

Zanetti, Metitieri and Bianchetti (1998) in a non randomized controlled trial tested the efficacy of behavioural techniques and group discussion in management of behavioural problems. Control group did not receive any specific intervention. Post assessment showed that caregivers in experimental group showed an increase in disease knowledge from baseline to post test while control showed none. In experimental group there was a significant decrease in perceived stress even though the behavioural disturbances in the patient did not decline significantly.
Marriot, Donaldson, Tarrier and Burns (2000) studied the effectiveness of cognitive behavioural family intervention in reducing the burden of care in caregivers of patients with Alzheimer’s disease. The intervention included caregiver education, stress management and coping skills training spread over many sessions. The experimental group received family intervention and was compared with two control groups. There were significant reduction in distress and depression in intervention group at post treatment and follow up.

In a three month expert based and conceptualized group intervention with care giving relatives of dementia patients it was found that there is significant improvement in agitation and anxiety of dementia patents (Haupt, Karger & Janner, 2000).

In a study of Levy et al. (2000) total scores of BEHAVE-AD (Behavioural pathology in Alzheimer’s Disease Rating scale) decreased about 25 percent in response to psychologic intervention during the study. Similarly BEHAVE-AD global disturbance score decreased 14 percent in response to psychologic intervention. Specifically total BEHAVE-AD scores declined by an additional 27 percent in comparison with the placebo treatment group.

Smith and Buckwalter (2005) reported that seemingly simple adjustments can make a significant difference in the experiences of people with dementia. By focusing on person rather than disease nurses can promote comfort and functional autonomy in older adults with cognitive impairment. They further state that agitation, apathy, delusions, depression etc. are common behavioural symptoms. Behavioural symptoms in dementia may result from more than one single cause. Change of routine,
disturbance in environment etc. are found to be commonest causes. The need driven dementia – compromised behaviour model developed in 1993 states that behavioural disturbances, if responded to appropriately enhance quality of life (Kolanowski, 1999). In a study to reduce use of restraint in patients with behavioural problems by staff training programme it was found that number of restraint use reduced by 54 percent in treatment group and increased by 18 percent in control group. This difference between groups was statistically significant. Hence it was concluded that educational programmes for caregivers can improve the quality of care of people with dementia (Kolanowski, Litaker & Baumann, 2002).

In a study by Matthews, Farrel and Blacknae (1996) it was investigated whether a change from task oriented care to client oriented care affects the level of agitation and 24 hour sleep of dementia patients. Results showed that verbal agitation level significantly decreased after a period of 6 to 8 weeks. Also it was noted that staff became more tolerant of residual behaviour following this change.

Christensen (2000) stated that the family and caregiver are the best source of information regarding behavioural problems. Discussing behavioural symptoms with family are very important for current management as well as for future, since these disturbances are more severe in late stages of disease. Hence education of care giver and family members are very crucial. Families must know strategies for keeping the patient safe at home and should have means for identifying patient if he wanders away from home.

A study was undertaken by Buckwalter, Gerdner, Kohan and Hall (1999) to study the effectiveness of community based psycho educational
nursing intervention designed to teach home caregivers to manage behavioural problems of persons with Alzheimer’s disease and related dementias. Post intervention assessment showed the remarkable effectiveness of psycho-educational nursing intervention in managing the behavioural problems and its direct effect on reducing caregiver distress. Lavonie et al. (2005) reported that psychoeducational group interventions are helpful for caregivers of persons with dementia. The educational input helped in adopting better coping strategies and seeking social support.

A study by Skovdahl, Kihlgren and Kihlgren (2003) reported that caregiver attitudes influence the behaviour disturbances. Caregivers who master necessary skills to mange demented are successful in curbing distressing behaviour.

Many studies have reported that educational interventions with carers not only decreases the carer burden and tolerability of the particular symptom but can also have a positive impact on patient behaviour and possibly delay institutionalization (Brodatty, Mc Gilchrist & Harris, 1993; Ostwald et al., 1999; Teri, 1999; Marriot et al. 2000; Hepburn, Tormatore, Center and Ostwald, 2001).

In a study by Coen O’ Boyle, Coakley and Lawlon (1999) reported that carer education can improve patient’s behaviour disturbances. The study showed significant improvement in managing problem behaviours in post intervention measurement.

A study on effect of family care giving by family care giver training showed that it is beneficial to give training to caregivers which has
significant positive effect on beliefs about care giving and reaction to behaviour (Hepburn et al., 2001).

Basic principle of care for behavioural problems include adjusting daily routines, adjusting interaction and communication strategies, changing reactions and responses to behaviour and monitoring and adjusting environment (Smith & Buckwalter, 2005).

A study by Teri, Gibbons and Mc Curry (2003) involved teaching caregivers to identify problem behaviours and to apply behaviour management techniques to decrease their occurrence which also included giving regular exercise. The three months and 24 months post testing showed that Alzheimer’s Disease participants receiving this combination of interventions significantly outperformed the control group on measures of physical and behavioural functioning.

De Vugt et al. (2004) conducted a one year follow up study on influence of care giver management strategies on the functioning of demented patient. After assessing patient’s behaviour using Neuropsychiatric Inventory, repeated measurements were held over a period of one year. The analysis of results showed that patients of those care givers who adopted management strategies positively showed significant improvement. Hence any intervention programme should aim at teaching caregivers adequate management strategies.

There are many studies which have reported efficacy of physical exercise based intervention for people with Alzheimer’s disease (Pallenschi, Vetta & De Gennaro, 1996; Lazowski, Ecclestone & Myers, 1999; Thomas & Hugeman, 2003; Mahendra & Arkin, 2003; Arkin, 2003).
Chapter 2

Physical exercise based interventions for people with AD have been tested in some of the studies listed below. Here the efficacy of home based exercise programme along with care giver training for behaviour management was studied. Care giver training included teaching caregivers to identify problem behaviours and apply behaviour management techniques to decrease their occurrence. Results at two years showed that clients significantly out performed the control group on measures of physical and affective functioning (Pallenschi et al. 1996; Lazowski et al. 1999; Rolland, Rival & Pillard, 2000; Thomas and Hugeman, 2003; Mahendra & Arkin, 2003).

Another study by Teri et al. (2003) reported that exercising for 60 minutes or more per week resulted in improved levels of functioning when compared with people only on routine care. These results were maintained in a three month and 24 month follow up assessments also. In addition to exercise, caregiver training also was found to be helpful especially in a combined form.

Woodhead (2005) studied behavioural and psychological symptoms of dementia and the effect of physical activity on improving the behaviour. This three month study on 94 individuals attending adult day service centers examined the effect of physical activity on restless behaviour, mood behaviours and positive behaviour. Results showed that some features of programming may be related to improvements in restless behaviour and the positive behaviour increased overtime, as a result of physical activity.

Exercise and activity level was found to be an important contributor to better functioning in demented in a study by Teri and Uomotu (1991).
The method adopted was to train caregivers to facilitate and supervise exercise and activity.

Mahendra (2004) reported that exercise and behavioural management training improves physical health and reduces depression in people with Alzheimer’s disease. The improvement shown was statistically significant which is supported by similar studies by Pallenschi et al. (1996), Lazowski et al. (1999), Rolland, Rival, and Pillard (2000), Laurin, Verreault, Lindsay, Mc Phersan and Rockwood (2001), Thomas and Hugeman (2003), Mahendra & Arkin (2003).

Exercise and behavioural management training has found to be effective in improving physical functioning and mood (depression). These findings were consistent both in three month and two year follow up of a study in 153 people with a mean age of 78 years and are diagnosed as AD (Teri et al. 2003).

In a study of behavioural treatment in dementia care units by Lichtenberg (2005) it was found that compared with usual care group, the behavioural treatment group demonstrated reduced severity in behavioural disturbances in terms of being troublesome to care givers or dangerous to residents. The behavioural treatment was enthusiastically received by the facility staff and the family care givers of the patients.

Woods, Rapp and Beck (2004) in a study of escalation and de-escalation patterns of behavioural symptoms of persons with dementia, reported that effective interventions can de-escalate and alter behaviours’ persistence.
Effectiveness of nonpharmacological interventions for the management of Neuropsychiatric symptoms in dementia was systematically reviewed by Aylon in 2006. The review from 1996 to 2005 showed that six single case design studies found a moderate reduction in problem behaviours. The relative reduction was from 50 to 100 percent. In studies based on randomized controlled trials (RCT) one RCT found a reduction in four neuropsychiatric symptom subscales (Irritability, verbal agitation, physical aggression and ideation.). Another RCT found no effect. Under bright light therapy on Single Case Design (SCD) found short term improvements on the agitated behaviour rating scales. The conclusion drawn in this review was that interventions that address behavioural issues and unmet needs and that include caregivers may be efficacious.

A multicentered intervention study in which dementia patients and their carers were both supported by professional staff member was conducted in Netherlands. The results showed that in the intervention group there was moderate to large effect on many problem behaviours. Hence professional support to family members in caring for demented with behavioural problems is highly effective (Droes, 2004).

Studies on effectiveness of collaborative care for older adults with Alzheimer’s Disease showed that care programme led by an advanced practice nurse working with patient’s care giver showed significant improvement in the quality of care and in behavioural and psychological symptoms of dementia.

Paraswani (2004) concluded that behavioural interventions are effective in decreasing the behavioural problems of patient with dementia.
It was found that in post assessment the behavioural problem decreased by 31.8 percent and caregiver’s distress was reduced by 32.08 percent. This study included teaching the caregivers management strategies for behavioural problems of patient. The programme formulated was termed as ‘ABC’\textquotesingle s of behavioural management. This ‘ABC’\textquotesingle s of behavioural management strategies are factors that importantly guide the intervention process which includes,

- Assess and address factors that can be readily managed – unmet needs such as pain, wetness, hunger etc. Assess and address delirium, depression etc.

- Anticipate situations and environments that predictably provoke anxiety and fear and make every effort to modify them to minimise those effects.

- Acknowledge the dementia patient’s anger over the loss of his/her life, tell them that you understand their frustration.

- Be consistent – maintain structure by keeping the same routines. Use barriers like curtain or coloured streamer to mask doors. Learn to interpret certain behaviours. eg: pulling at clothing could indicate a need to use the bathroom.

- Caregivers benefit from education. Teach them strategies to communicate well with demented patients. eg: use of short simple sentence and give only one directive at a time. Avoid sentences phrased in the negative. Teach them to speak slowly, and not to be afraid of repeating themselves frequently. Teach them to use gestures and nonverbal cues, like exaggerating a smile or a nod.
Limit choices to minimize confusion. Avoid confronting and correcting patient unnecessarily.

- Distract the person with a snack or an activity. Use gentle touch soothing music, reading or walks to dissipate anxiety and stress.

Lichtenberg (2005) studied the effect of behavioural treatment in dementia. In this random study twenty older adults with Alzheimer’s disease participated. A trained nursing assistant implemented the behavioural treatment three times per week for 20 to 30 minutes per session. On evaluation after three months in comparison with usual care group the behavioural treatment group demonstrated reduced frequency of behavioural disturbance. But there were no difference with regard to depressive symptoms or diagnosis. Also it was found that the behavioural treatment was enthusiastically received by the facility staff and by family caregivers of the participants.

Cummings (2000) stated that effective counselling of caregiver can improve interactions with the Alzheimer’s dementia patients, thereby improving behavioural symptoms. But the effectiveness of this approach is not yet clear. The ABC approach for managing behavioural disturbances is widely used method that provides a framework for helping the caregiver recognize and manage these disturbances. The caregiver shall try to recognize the antecedent (A) of the behaviour (B) and the consequences (C) of that behaviour. This approach makes the caregiver aware of controllable circumstances that can lead to behavioural disturbances and to avoid responses that may reinforce these disturbances. Though benefit and effectiveness of this approach has not yet been studied systematically, caregivers have reported benefit of this method.
The most important aspect of counselling the caregiver is to make him or her aware that behaviour such as anger and agitation do not occur because the patient is mad at them. Tell them that they are distinctive symptoms of Alzheimer’s disease like other cognitive symptoms.

Livingston, Katona, Paton and Lyketsos (2005) in a systematic review of psychological approaches to the management of Neuropsychiatric symptoms in dementia reported that specific type of psychoeducation for caregivers about managing neuropsychiatric symptoms were effective and the benefits lasted for months. Behavioural management that centered on individual patients’ behaviour or on caregiver’s behaviour had similar benefits as did cognitive stimulation. Music therapy and sensory stimulation were useful during treatment session but had no long term effects. Lack of evidence regarding other therapies is not an evidence of lack of efficacy. High quality research is required in this area to determine the effectiveness of various strategies.

Hubbard, Cook, Tester and Downs (2002) by quoting two relevant studies on demented person’s use of nonverbal communicative behaviours, stated that older people with dementia used non verbal behaviour as tool of communication both for self and interpreted other’s nonverbal behaviour. This has relevance for carer to communicate with demented in more meaningful ways.

Dementia and aggressiveness was studied by using video recorded interactions between client and caregiver by Skovdahl, Kihlgren and Kihlgren (2004). On thematic content analysis of the text of the above interview, it was found that nurturing and supportive climate and competence seemed to be the conditions necessary to facilitate reflections
and promote creativity in the caregivers such that they are able to develop possible ways of handling difficult situations like aggressiveness in resident with dementia.

Behavioural management of a group of patients at a nursing home was evaluated in a randomized controlled trial. Finding of the study showed that residents in the intervention group had significantly improved scores for depression and other symptoms. The behavioural management was implemented through training of care givers by seminars and weekly visit by a psychiatric nurse (Proctor et al. 1999). Findings of this study are similar to those reported by Bartrol (1979).

Management of agitated behaviour using music therapy in patients with dementia was studied by Sung (2006). This study reported that music therapy has been found effective as a low cost and easy to administer therapy, especially in agitated behaviour. Similar findings were reported by many other researchers like Goddaer and Abraham (1994) and Gerdner (2000).

Agitated behaviour is a common behavioural problem that puts the patient at risk of injury and institutionalizations and is associated with caregiver stress. Spira and Edelstein (2006) reviewed 23 articles that dealt with management of agitation by behavioural interventions. These articles targeted wandering, disruptive vocalization, physical aggression etc. and a combination of these behaviours. The review showed that behavioural interventions are offering considerable promise. This review collectively provides evidence that warrants optimism regarding application of behavioural principles to the management of agitation in older patients with dementia.
In an article titled management of agitation in demented nursing home patients, Billing (1996) described agitation as a major clinical problem which patients, families and staff are required to cope. Cognitive/behavioural/ environmental treatments have the advantage of few or no adverse effects and no drug–drug interactions. Some of these measures are basic nursing management techniques for coping with agitated older adults while others attempt to diminish specific behaviours. Non pharmacological management is very important since no one medication is found to be the treatment of choice and as there is a clear dearth of double blind placebo – controlled trials in this area.

Keating et al. (2000) studied the manifestation and nursing management of agitation in dementia patients. The major finding was that nurses’ actions triggered most highly rated episodes of agitated behaviour and majority of these nursing actions were related to those involved in carrying out activities of daily living for the residents. Hence it is important for the carer whether nurse or caregiver, to devise strategies which will avoid arousal of agitation in patients.

Agitation in dementia was reviewed by Kong (2008). The critical attributes of agitation are inappropriate, repetitive, non specific and observable. Patient factors, interpersonal factors, environmental factors and restraint were identified as precipitating antecedents. Common other antecedents included unmet needs, discomfort and misinterpretation.

In a study Kim and Buschmann (1999) reported that expressive physical touch with verbalization is effective on dementia patient to lower anxiety and this strategy reduces frequency of episodes of dysfunctional behaviour. This method is cost effective, simple to learn and practice
which was found effective in improving and maintaining patient’s high quality of life.

In a randomized double blind three group experimental study using therapeutic touch it was found that there is significant improvement in behavioural symptoms when compared to other two groups. Hence therapeutic touch offers a nonpharmacological, clinically relevant modality that could be used to decrease behavioural symptoms of dementia, specifically restlessness and vocalisation (Woods, 2005).

A study on women with dementia and behavioural disturbance and their carers by Graneheim, Norberg and Jansson (2001) showed that the main interactions relates to privacy, identity, autonomy and security. In these interactions those who are engaged in care, meet problems that can be solved and also that can not be solved, but only related to.

Careful structuring of the environment for the Alzheimer’s dementia patient can be instrumental in reducing the occurrence of behavioural disturbances. More structured environment is likely to reduce the occurrence of behavioural disturbances. Careful structuring of the environment does not imply that patient stimulation should be kept to minimum. The environment should keep the patient engaged without over stimulation. Both isolation and over stimulation can lead to disorganization and agitation (Cummings, 2000).

Teri and Gallagher-Thompson (1991) and Teri et al. (1992) proposed detailed measures for management of behavioural problems which are discussed below. They stated that initially classifying behavioural problems are helpful in management. Eg. depressive
symptoms, agitation/anxiety symptoms etc. Then measures are suggested for each type of behavioural problems.

For depression, consider activities that engage the patient in activities those are not beyond their abilities and which are helpful in minimising frustration. Depending on the stage of dementia, offering activities such as gardening, pet care, arts and crafts etc. can help in treatment of the depressive symptoms.

In anxiety, reassurance, familiar environments, calming music, smooth lighting etc. can help. Situational manipulation is useful in many instances of behavioural problems. Distraction and redirection are also useful. Anticipate situations that predictably provoke anxiety such as baths, dental appointments etc. Educate family and caregivers to always explain what they are doing or going to do. This may often mean reintroducing oneself many times a day.

Learn to recognize certain behaviour. Eg: Agitated state or pulling at clothing could indicate need to use bathroom. Give nonverbal reassurances like gentle touch or a hug. Be liberal with compliments, as the ability to respond to the complimentary comments are often retained late into dementia.

Educate family and caregivers about specialized communication strategies to minimize behavioural problems. Eg: use only short simple sentences. Give only one direction at a time. Do not use negatively phrased sentences. Never use statements like ‘Do not go outside’. This can be replaced by ‘stay inside’.
Teach caregiver to use non verbal cues like exaggerating a smile or a nod. Advice the care giver to be careful in maintenance of eye contact while talking with the client. Limit choices to decrease confusion. Avoid disturbances like television unless the patient is watching.

Activities that help to improve interest and stimulate demented patients are useful. But do not over stimulate. Activities that keep patient awake up to 9pm /10pm after dinner are helpful to prevent early morning awakening and night time disturbances.

Regular exercise, outside if possible helps to dissipate anxiety. Also it helps to be awake during day and tired during night. Carrying a doll or their favourite pet has been found helpful in calming the patient. Participating in cooking has the dual benefit of instilling a sense of usefulness and stimulating appetite.

Camouflaging exits like painting doors indistinctively or using gates which are not easily recognisable are found to be helpful. Try measures like pulling a wide dark stripe on the floor in front of restricted areas. A large sign with patients name or a wall mounted display box containing familiar pictures and objects can help to reassure the patient that this is the correct room.

Physical restraints should be limited to situations where all else has failed. Restraints may be necessary when a patient can not safely ambulate but can not remember his inability. The environment should be made as safe as possible for the demented patient. Ambulatory demented patients shall be given the opportunity to safely wander without restraints.
Samuel and Srinivas (2001) reported that stress over distressing symptoms like wandering, shouting, screaming etc., can be reduced through a cognitive behaviour approach. The therapy included blocking stress inducing thought patterns and gaining mastery over the situation, thus reducing distress among the carers. The therapist can assist in scheduling activity with adequate respite. In addition ability of the carer to come to terms with previous emotional problems with the patient and deriving positive interpretations of caring experience was found to minimise if not mitigate feelings of distress. This study was on five carers as part of a rehabilitation programme.

In a study of behavioural symptoms and care giver distress Mourik (2004) reported that agitation/psychosis and depression are the behavioural symptoms which were strongly related to caregiver distress as measured by Neuropsychiatric Inventory. Also it was found that caregivers at home were more distressed than caregivers in residential setting.

Many studies have reported the effectiveness of programmes like care giver education in reducing care giver distress. The impact of a highly structured and intensive 10-day residential programme and continued support in the form of telephone conference calls over a 12 month period was assessed by Brodaty & Gresham (1989). They found that the carers and patients in the training programme had significantly lower psychological distress and lower rates of institutionalization respectively compared with controls. Ostwald, et al. (1999) also reported similar findings.
Hepburn et al. (2001) found that reduction in distress of caregiver as a result of training lead to significant change in reaction of care giver to the behaviour of patient.

Intervention study conducted by Marriot, Donaldson, Tarrier and Burns (2000) reported that care giver education and stress management were helpful in significantly reducing distress and depression in care givers.

A prospective study to assess the behavioural symptoms by De Vugt (2005) reported that caregiver distress related to patient behaviour was significant predictor of nursing home placement. Most importantly it is the distress of caregiver or care giver’s emotional reactions to behaviour of patient is the deciding factor than the behaviour problem itself. Hence interventions aimed at teaching caregivers strategies to manage difficult behaviour of patients may enable the caregiver to continue care at home.

Many other studies have demonstrated psychological strategies or behavioural intervention to enhance quality of life of demented persons with behavioural symptoms. These include stimulation oriented therapy including recreational and social therapies, exercise and dance. Constructive environmental modification also can help in improving behavioural symptoms (Baines, Saxby & Ehlert, 1987; Teri & Gallagher-Thompson, 1991; Minitzer, Lewis, & Pennypaker, 1993; Woods & Ashley, 1997; Logsdon & Teri, 1997).

A study by Paterson, Hamilton and Grant (2000) found that specific interventions might assist in management of behavioural problems in
Alzheimer’s dementia. The problem behaviour specifically investigated in this study was wandering behaviour and results showed remarkable improvement.

Social dancing was found to be effective as a nursing intervention that supports patient’s positive feelings, communication and behaviour in a study by Bengtsson, Winblad and Eleman (1998).

Derouesne, Baudouin-Made and Kerromes (1998) stated that non-drug management of Alzheimer’s disease and caring for family members remain the main elements to delay institutionalization. This include identification of problems, understanding and control of psycho-behavioural manifestations, sustaining and stimulation of cognitive functions, improved communication and alleviating caregiver distress.

Tonchon, Porter and Ritchie (1998) opined that management of behavioural symptoms such as depression, apathy, aggressiveness, agitation, sleep disturbances etc., can be managed by better understanding of causative factors such as environmental changes and somatic illness. Main strategy in treatment shall be giving information to family and friends, psychotherapy and adaptation or inhabitation etc.

Matteson, Linton, Clary, Barnes and Lichtenstein (1997) undertook a three year study of efficacy of using a theoretical model based on Piaget’s cognitive developmental stages for consistent behavioural and environmental interventions for persons at all stages of Alzheimer’s disease in nursing homes and special care units. After 18 months on assessment it was concluded that problem behaviours significantly reduced in treatment group but not in control group. Hence results of this
study indicate that using behavioural and environmental interventions based on Piaget’s level of cognitive development may be an effective method of managing problematic behavioural problems and decreasing the use of psychotropic medications in demented persons.

Gromley, Lyons and Howard (2001) studied the effectiveness of behavioural management of aggression in dementia by a randomized controlled trial. This study was on community residents who were staying with their main care giver. Only patients who were rated at least mildly aggressive were included in the study. Behavioural management strategies were based on two fundamental strategies 1) training carers to view behavioural problems in the context of memory impairing disease and 2) identifying factors which precipitate and maintain these problem behaviours.

The behavioural management programme devised in this study consisted of four sessions conducted by one of the authors over an eight weeks period. Four categories of behavioural interventions were included as necessary which included the following.

1) Avoidance or modification of precipitating and maintaining factors such as inactivity, frequent environmental changes and assignment of complex task.

2) Use of appropriate communication techniques.

3) Validation or acceptance of false statements or inappropriate request made by patients.

4) Use of distraction technique during aggressive episodes.
During the programme carers who successfully implement behavioural strategies were encouraged to continue to adopt this approach in the management of future episodes of aggression. When behavioural interventions appeared to be unsuccessful, a further assessment was made of the antecedent and consequences of target behaviour and modified interventions were planned.

The assessment of patients was done by an author who was blind to group allocation using Rating Scale for Aggressive Behaviour in Elderly (RAGE) and Behavioural pathology in Alzheimer disease rating scale (BEHVE-AD). All subjects in both groups were given initial and follow up assessments. Using analysis of covariance it was found that there was a trend towards lower RAGE scores in experimental group compared to control group. There was no significant difference in BEHAVE - AD scores in both groups. Also it was found that behavioural layout had only little impact on carer burden.

Behavioural problems in dementia like agitation can be managed with thorough evaluation along with combined behavioural/environmental approach as stated by Minitzer, Hoering and Mirski (1998) in a detailed review of pertinent literature in the context of authors’ clinical experience.

Environmental conditions were found to increase destructive behaviour in a report by Low, Draper and Brodaty (2004). Hence care has to be taken in modifying environment of the demented client.

In a study by Lesley, Andrew, Benjamin, James and Michael (2005), it was found that environmental approach was helpful in reducing agitation in persons with dementia. The agitated behaviour included
aggressiveness, wandering, noisiness etc. which were significantly reduced on relocating the persons to a special care unit.

In managing agitation in dementia, three approaches in nursing are important. They are subject centered, environment centered and caregiver centered approaches. Subject centered strategies include interventions such as massage, familiar voices, light etc. Environment centered methods include modifications of environment to client’s needs. Staff centered programmes are aimed at staff education and training. A review of various relevant nursing research shows that in spite of effectiveness of this methods still restraints are used widely (Williams- Burgess, Ugarriza & Gabbai, 1996).

Studies on sleep pattern of dementia patients suggests that providing meaningful day time physical and psychosocial activity can assist in maintaining circadian sleep wake rhythmicity (Sullivan & Richards, 2004).

Beattie, Algase and Sony (2004) in a study of behavioural symptoms and the effect of systematic behavioural nursing intervention on mealtime behaviour, reported that all the cases were able to sit at the table for meals. Results show that wandering and or leaving table during meal time could be effectively controlled by systematic use of behavioural nursing intervention.

A study by Yao and Algase (2000) in elderly demented showed the influence of ambience on wandering behaviour, highlighting the importance of addressing the emotional valence of social and physical environments in care of demented.
In a review of management strategies for behavioural problems Lawlon (2002) reported that there is a dearth of evidence based on enough controlled studies regarding nonpharmacological interventions.

Individualized music therapy and specific behaviour interventions have been found to improve certain troubling behavioural symptoms in dementia, but more evidence is required in this area ( Devanand & Lawlon, 2002). Behavioural disturbances also interact prominently with environmental influences and psychological predispositions.

Brain disease, host factors and the environment interact to produce final behavioural outcome. Agitation for example may occur as the result of frontal lobe dysfunction or it may be the product of an adverse interaction with an obstreperous room mate in a nursing home and a lifelong tendency to anxiety and limited tolerance. The clinical analysis of behavioural changes in people with dementia require thorough investigation of all the contributing dimensions in order to provide a well informed platform for non pharmacological and pharmacological interventions ( Cohen- Mansfield, 2001).

Non pharmacological management of behavioural and psychological symptoms of dementia was studied by Callahan (2006) by using standard protocols to initiate management of behavioural and psychological symptoms of dementia. In this study, intervention patients received one year care management by an interdisciplinary team led by an advanced practice nurse working with patients, family caregivers and integrated within primary care. Neuropsychiatric Inventory (NPI) was used at baseline, and at 6, 12 and 18 months. Intervention patients had significantly fewer behaviour and psychological symptoms of dementia as
measured by the total NPI score at 12 months (mean difference - 5.6; P=0.01) and at 18 months (mean difference -5.4; P=0.01). Intervention caregivers also reported significant improvements in depression. No significant difference was found on other aspects like cognition, activities of daily living or on rates of hospitalization.

Turner (2005) in a review of studies on non pharmacological interventions for behavioural symptoms of dementia stated that behaviour such as aggression, screaming, restlessness, agitation and wandering are a frequent reason for referral to specialist mental health services for older people. His detailed review showed that there was still little evidence on effectiveness of various interventions to provide firm guidelines. Hence he stated that non pharmacological intervention studies are further required to form firm guidelines for non pharmacological approach. Though non pharmacological interventions have been recommended in professional and government policy statements, studies of their effectiveness have been criticized for being poorly controlled, focusing on milder behaviour problems and for requiring disproportionate use of resources. Studies on this area shall include those on staff training and liaison interventions, studies on range of different therapeutic interventions and individualized interventions. He concludes that a structured decision making process for selection of interventions is required in which the limited available evidence can be drawn together to provide a basis for targeting clinical resources while the research evidence is strengthened.

A systematic review of effectiveness of nonpharmacological interventions for the management of neuropsychiatric symptoms in
Review of Literature

patients with dementia was undertaken by Ayalon (2006). The review included three Randomized Controlled Trials (RCT’s) and six Simple Case Designs (SCD’s). One SCD found a moderate reduction in problem behaviour under unmet needs interventions. Under behavioural interventions based on observational data all four SCD’s reported a relative reduction of 50 to 100 percent in neuropsychiatric symptoms. Under care giving interventions there were three RCT’s. At the six months follow up, one RCT found a reduction in four neuropsychiatric symptom subscales including irritability, verbal agitation, physical aggression and ideation disturbance. Another RCT found significant improvement in frequency and severity of target behaviours. The third RCT found no effect. Under bright light therapy one SCD found improvements on agitated behaviour rating scale. It was concluded by this review that nonpharmacologic interventions for neuropsychiatric symptoms that address behavioural issues and unmet needs and that include caregivers may be efficacious.

Onega (2006) reported that care for depression and behavioural symptoms should be individualized to match presenting symptoms. Implementation of effective psycho - geriatric models of care and incorporating evidence based knowledge into practice setting are essential to assessment and management of behavioural problems.

Non pharmacologic management is the first line of intervention in behavioural problems. Pharmacologic therapy shall be reserved for situations where non pharmacological interventions have been fully explored and implemented to the greatest degree possible or in cases where severe dangerous symptoms are present. Non pharmacological
therapy for behavioural problems provides the background for all pharmacotherapy and for many situations they should suffice. Few randomized trials have tested efficiency of behavioural management in dementia (Finkel, 2000; Teri, Logsdon and Uomoto, 1997).

Bullock (2006) in an article titled “treatment of behavioural and psychiatric symptoms in dementia; implications of recent safety warnings.” emphasizes the need to develop international guidelines for alternate therapies for behavioural and psychological symptoms of dementia. It is reported that trials of antipsychotics have shown an increased risk of serious cardio-vascular adverse events such as stroke and transient ischemic attack in elderly patients. A review published on commonly used antipsychotic Risperidone and Olanzapine shows three fold increase in stroke risk in elderly patients with dementia. Hence drug regulators in Europe and U.S.A now recommend against use of these agents for behavioural control. Alternate therapies are hence essential for management of behavioural and psychiatric symptoms in dementia.

According to Bachman (2006) the behavioural and neuropsychiatric symptoms of dementia have become an increasingly important focus of clinical research. These symptoms also pose tremendous challenge to families and caregivers. The late afternoon and evening exacerbation of these symptoms are also of special interest. Hence an improved understanding of complex behaviour will lead more effective therapies in future.

Robert (2002) stated that behavioural problems of dementia are among the most distressing manifestations and result in considerable social and economic costs. Non pharmacological approaches such as
environmental and behavioural interventions may be of help in providing benefits to the patient.

Small et al. (1997) in a consensus statement of the American Association of Geriatric Psychiatry, Alzheimer’s Association and American Geriatric Society identified few major areas for future research in Alzheimer’s dementia. One of the high priority area was management of behavioural symptoms by psychosocial therapies or non pharmacologic management.

Further investigation of Neuropsychiatric symptoms associated with dementia therefore promises to improve care for patients, reduce carer distress, enhance differential diagnosis and provide an outcome relevant to symptomatic and disease modifying dementia therapies (Mc Keith & Cummings, 2005).

Tariot (1999) stated in a detailed review article that recognizing behavioural pathology associated with dementia is important because it can be distressing to the patient, lead to dangerous interactions with others in the environment and result in inappropriate psychotropic medications. Chapman (2006) opined that better understanding of dementia is essential to the future of public health. Since dementia is costly in terms of both personal suffering and economic loss, an understanding of its prevalence, risk factors and potential interventions is emerging as a increasingly important facet of public health and health care delivery.

In view of the above detailed review of literature it can be clearly concluded that the behavioural problems in dementia are one of the most distressing symptoms, which is very common among people affected with
dementia. Moreover in management side it was seen that available information suggest that non pharmacological approaches are unquestionably the best method of managing these problems. It was pointed out by many expert researchers (Cohen- Mansfield, 2001; Turner, 2005; Ayalon, 2006; Bullock, 2006; Onega, 2006) that evidence based practice required many more controlled studies in various diverse settings which will help in formulation of international guidelines for nonpharmacologic management of behavioural problems in dementia. Also many studies have reported the effectiveness of management programmes in reducing care giver distress (Brodaty & Gresham, 1989; Ostwald et al 1999). Moreover the review of literature shows that there is a severe dearth of studies in nonwhite populations and in developing countries like India, both in the area of assessment and management of behavioural problems in dementia.

Hence in the context of the above important facts the researcher decided to undertake a detailed study of assessment and management of behavioural problems in dementia.