

Discussion

Chapter-5

DISCUSSION

The major issues that emerged from the study are discussed below in the context of available earlier literature and theoretical underpinnings. It needs to be mentioned at the outset that three types of dementia groups and the impairment of autobiographical memory were discussed first, and then they were compared with the normal group. In the same way, wellness among dementia groups was discussed and then their results were differentiated from the normal group.

In this research, the three major broad objectives are discussed separately though they share a common core in spirit. These are i) differences of autobiographical memory impairment and wellness among patients with Alzheimer's disease (AD), vascular dementia (VaD), Parkinson's disease with dementia (PDD) and normal subjects, ii) effect of gender differences in impairment of autobiographical memory and wellness among four groups and iii) whether impairment in autobiographical memory on four groups is associated with subjective sense of wellness.

5.1 COMPARISON OF THE FOUR GROUPS IN TERMS OF AUTOBIOGRAPHICAL MEMORY (AM) AND WELLNESS

The different lifetime periods tapped in AM are childhood personal semantic and autobiographical incident, early adult life personal semantic and autobiographical incident recent life section personal semantic and autobiographical incident.

In the present study, results revealed that the three groups (AD, VaD, and PDD) of patients significantly differ in terms of AM (regardless of the nature of memories) and subjective sense of wellness from that of the normal subjects. AD group participants performed significantly more poorly than VaD and PDD and normal groups on both the personal semantic and

autobiographical incidents schedules of the AMI. Contrarily, VaD and PDD groups have comparable degree of wellness and they are better than AD in semantic and autobiographical memory.

Autobiographical episodic memory is believed to be the most vulnerable in dementia, and is often impaired from the early stages (Butters & Cermak, 1986). One of the earliest characteristics of AD is that of memory impairment (Butters et al., 1987; Welsh et al., 1991) with medial temporal lobe atrophy (Buckner et al., 2005). Several studies have documented autobiographical memory loss for past experiences in early AD (Addis & Tippett, 2004; Budson et al., 2007; Ivanoiu et al., 2006; Piolino et al., 2003). AD patients are almost twice as impaired on measures of language/semantic functioning and memory (Hampstead, 2006). AD patients have impaired capacity to visualise or conceive of themselves as a traveller in subjective time, a pre-requisite for auto-noetic consciousness (Tulving, 2002). Piefke et al., (2003) also noted that in the early stages of AD, pathologies in the entorhinal cortex and adjacent limbic areas, are associated with impairments of emotional processing (Hargrave et al., 2002). AD patients consistently recalled vague judgments on their memories irrespective of time. AD patients exhibited deficits for both episodic and semantic aspects of autobiographical memory relative to controls (Ivanoiu et al., 2006). This deficit probably reflects the fact that when describing past events, individual typically used both episodic and semantic forms of information, which are knitted together into a narrative but gradually the episodic components of AM are likely faded by semantic memory (Murphy et al., 2008). Theories expected that personal semantic memory to be less dependent on the hippocampus, would naturally be less affected by the neuropathology associated with early AD but when the degeneration spreads in the lateral temporal cortex, semantic memory started declining (Fujii et al., 2000). Thus, it is evident that AM impairment in

AD has been widely accepted by other researchers and in the current research endeavor, impairment of AM among AD patients are consistent with other studies.

It should be mentioned beforehand that while selecting the patients for VaD, specific location of the stroke was not considered, rather holistic approach was imbibed. VaD group participants performed significantly poor from normal groups but better than AD participants. Studies have indicated that AM is more severely impaired in AD compared to VaD (Kertesz & Clydesdale, 1994). VaD with frontal lobe damage likely to fail both to access detailed AM's, consistent with an inability to use retrieval frameworks effectively, and fail to verify the accuracy of those memories recalled, resulting in confabulation (Addis, 2001). Baddeley and Wilson (1986) had noted that VaD patients with widespread diffuse changes including myelin loss in frontal lobe white matter can access lifetime period and general events, but cannot recall specific and detailed autobiographical memories. Additionally, these individuals may produce confabulatory memories. They termed it as a "clouding" of autobiographical memory. Reed et al., (2000) found that episodic memory failure in patients with sub-cortical cerebrovascular disease was associated with prefrontal lobe mechanism, whereas memory performance in patients with Alzheimer disease was correlated with left hippocampus and temporal lobe mechanism. Sometimes combinations of dysfunctional neurological mechanisms are also apparent (Bright et al., 2006; Mitchell & Gaffan, 2003; Saunders & Aggleton, 2007) which suggests that due to extensive damage in sub cortical lesions in VaD, hippocampal system, including the medial temporal lobes, with the medial diencephalon and other subcortical structures causes severe AM impairments. Looi and Sachdev (1999) reviewed eighteen studies and found that episodic memory impairment are more striking in AD than VaD. VaD patients with a lesion of hippocampus, prefrontal cortex and related medial temporal lobe may lead to episodic memory

loss (Cipolotti et al., 2001; Fujii et al., 2000; Moscovitch et al., 2000; Maguire et al., 2006; Steinvorth et al., 2005; Viskontas et al., 2000). Budson and Price (2001) noted that vascular dementia could cause episodic memory loss, not due to damage to the Papez circuit, but rather damage in the frontal lobes. If the frontal lobe has been damaged, the circuit fails with the medial temporal lobes and the memories became distorted and inaccurate. VaD patients have more intact episodic memory than AD (Padovani et al., 1995; Carlesimo et al., 1993, Loewenstein et al., 1991). Thus, it may be implied from the above standpoint that patients with VaD were better than AD as it depends upon the location and extent of damage not due to hippocampus atrophy.

PDD patients may encounter difficulties on episodic memory tasks because of their negotiation difficulty to access organised (conceptual) verbal encoding strategies (Taylor et al., 1986). Patients with AD may fail to access items from episodic memory because of problems in contextual encoding and retrieval. Such deficits noted in AD patients are usually linked to their hippocampus lesions, while frontal lobe dysfunction in PDD could be responsible for the conceptual impairments (Caltagirone et al., 1985). Previous research had found superior performance on recognition rather than recall based memory tests among PDD patients suggested impairment in retrieval processes rather than encoding and storage of information (Bak et al., 2005). In autobiographical task, the AD patients performed poorly probably due of their inability to inhibit irrelevant information and might be due to increased sensitivity to interference, whereas the deficits of PDD patients reflect sensitivity to practical interference (de Souza et al., 2011). Both cortical and subcortical lesions can produce anterograde and retrograde deficits, their overall severity, increases with the extent of lesion, but cortical ablations produce more severe retrograde than anterograde effects (Buckley et al., 2001).

Subcortical damage leading to amnesia is not restricted to a single structure, rather pathways that are assessed together, will lead to widespread cortical dysfunction, and consequently dense amnesia (Aggleton & Brown, 2006). This explains why the two groups VaD and PDD are better than AD in autobiographical memory.

When the three dementia groups are compared with normal group, data showed significant deviation from normal participants. Several researchers have compared a group of subjects with AD with an appropriate control group and have documented AD patients performed worse than older normal subjects (Addis et al., 2008; Andrews-Hanna et al., 2007; Beatty et al., 1997; Fleischman et al., 1996; Greene et al., 1996; Sailor et al., 1998). AD patients showed not only lower performance scores from normal aged control but also lack the effect of semantic cues and the production of a large number of extra-list intrusions (Moal et al., 1997). When normal subjects were compared with degenerative dementia, it was observed that the chronological distribution of memories across the life span in normal group showed a peak in adolescence and early adulthood, decreases in midlife and increases in recent years, whereas, the distribution in demented group was more flat (Fromholt & Larsen, 1991). These findings suggest that people with dementia may lack the cognitive ability to engage in an effective and directed search for a specific memory. It has been observed that normal group displayed a significant reduction of remote episodic details but was compensated by an increase in semantic information. This observation was consistent with another study by (Addis et al., 2009; Levine et al., 2002).

Autobiographical memories can have important implications for enhancing psychological well-being (Bluck & Alea, 2002; Wood & Conway, 2006). Positive life events and experiences are fondly recalled across lifetime periods as observed in normal group. Many researchers from the field of social and cognitive psychology suggest a relationship between autobiographical

memory and subjective well-being of an individual (Parfit, 1984; Schechtman, 1982). Normal group expressed past events that contain more emotional touch (Schulster, 1995) and are more vivid (Morse, Woodward & Zweigenhaft, 1993; Niedzwienska, 2003). This group mostly retrieves positive events from life experiences that are rich in emotional content but just the opposite was noted in dementia group. Among AD patients, the responses mostly are vague and incomplete whereas, in VaD and PDD, most of the patients interpreted their life experiences in a more abstract way. AD and VaD had comparable degree of wellness likely due to their same pathology in subcortical structure and similar clinical presentation. Sub cortical dementia like PDD and vascular dementia have an impaired ability to manipulate acquired knowledge, apathy, depression, and slowed thought processes (Bonelli & Cummings, 2008). These features likely influenced decreased life satisfaction and poor emotional coping skills (Danner et al., 2001). Individuals with VaD and PDD are more aware of their decreased overall performance than AD patients. Life satisfaction was lower for mild dementia patients as it is associated with loss of identity (Jetten et al., 2010). Impairments of abilities in fluency and the ability to generate responses are main problems with patients having AD. Similarly, VaD and PDD patients responded more abstract responses, lacking in specific detail. Similarly, vague AM is likely to affect the ability to make definite statements about one's identity (Addis, 2001). Thus, remembering and sharing memories of positive events is an integral part of everyday life in normal individual that may contribute to well-being across the lifespan. A strong correlation was found between positive emotional content and healthy living (Danner et al., 2001).

5.2 EFFECT OF GENDER DIFFERENCES ON IMPAIRMENT OF

AUTOBIOGRAPHICAL MEMORY AND WELLNESS:

The current study revealed that in dementia groups, male participants were significantly better in recent life section of autobiographical incident at present hospital. In normal group, females were significantly better in total score and first school of childhood personal semantic, early adult life personal semantic in wedding, recent life section of autobiographical incident at present hospital whereas, in Well Being scale, males were significantly better than females.

The sex differences are likely as a result of more fundamental differences in brain organization. Language abilities are distributed across the brain differently in men and women, language processing are more bilateral in women, but more left lateralized in men (Kimura 1983). The differences between men and women in a variety of cognitive domains have also been well documented (Herlitz & Yonker, 2002; Maitland et al., 2000). The probable explanation of this finding may be framed as increased tendency among men in specific episodic recollection tasks (Fivush, 1998; Niedzwienska, 2003; Piefke & Fink, 2005) because men are better in substance based information (Aizpurua et al., 2010). They are better in concept based knowledge which are factually rich (Schulkind, Schoppel & Scheiderer, 2012). Men's autobiographical memories typically focused on experiences related to mastery and performance. Men and women are socialized into different interpersonal orientations; men are prompted to be independent and autonomous whereas women are prompted to be nurturing and socially connected (Niedźwieńska, 2003). The possible difference might be due to the influence of sex hormone during development and adulthood but the specific mechanisms responsible for this memory impairment remain unclear (Hamann, 2005).

Women's recall is more precise (Bloise et al., 2007; Fivush et al., 2003; Pohl et al., 2005) than men and when specifically prompted, their descriptions are longer (Friedman & Pines, 1991). Women have also been shown to date events in their lives more accurately (Skworowski & Thompson, 1990). Women are better socialized from childhood and they understand the importance of the social sharing of personal memories (Reese, Hayden & Fivush, 1996). In adulthood, research has found that women tend to recollect more frequently than men and use personal memories more as a source of communication (Hamann & Canli 2004; Merriam & Cross, 1982; Webster & Cappeliez, 1993). In the semantic memory tasks that involve remembering items that are verbal in nature, women are better performer than men (De Frias et al., 2006; Maitland et al., 2004). Women emphasis on specific episodes more than men (Goddard, Dritschel & Burton, 1998) and thus express past events that contain more emotional touch (Sehulster, 1995) and are more vivid (Morse, Woodward & Zweigenhaft, 1993; Niedzwienska, 2003). Women tend to experience greater enhancement of their memory by emotion (Seidlitz & Diener 1998). Niedzwienska (2003) found that themes play an important role in content analysis and categorizing memorable life experiences of men and women, namely that females inclined to generate flash-bulb AMs (consisting of both positive and negative events) that were more communal than men.

The present study further revealed that men have better life satisfaction than female group probably females tend to live with more chronic illnesses, report greater problems with physical function, and have a higher incidence of disablement as compared with males (Kaplan, 1991). Past studies have reported that older females showed poor quality of subjective report of wellbeing when compared with age matched male peers (Deek et al., 2002; Kaplan et al., 1991). Merrill et al., (1997) also reported that females interpret physical discomforts as symptoms and

they have a greater tendency to recall and report those symptoms than men. Rahman and Liu (2000) also observed that at the same level of physical performance, older females are more likely to report that they have difficulty in performing activities of daily living than their male counterparts. Wood et al., (2005) documented that females report discomforts more often than men and have a lower incidence of general wellbeing as compared to males. It had been documented that women have a lower threshold and tolerance for pain, seek treatment for pain more often than men, and give higher pain ratings in experimentally administered stimuli (Berkley, 1997; Wilson, 2006). Women experience lower physical functioning and more pain, possibly because they experience higher prevalence of chronic disabling diseases due to their menopausal problems (Wingard, 1984). The study result was in accordance with these findings.

5.3 ASSOCIATION BETWEEN AUTOBIOGRAPHICAL MEMORY IMPAIRMENT AND SUBJECTIVELY EXPERIENCED WELLNESS IN DEMENTIA AND NORMAL GROUP

The present research reveal that in dementia groups, total score of childhood personal semantic and early adult life of autobiographical incident in career is associated with wellness whereas, in normal group, association is noted in first school of childhood personal semantic and early adult life autobiographical incident in career.

Present research findings supported a pattern of retrograde amnesia (Ribbot Law) among dementia and normal group. According to Ribbot's Law, older information is better preserved than recent ones (Greene et al., 1995; Leplow et al., 1997; Moscovitch & Winocur, 1992; Thomas-AnteÂrion et al., 2000). The dementia patients as well as normal aged groups tended to deteriorate less towards the most remote period. The comparison between the profiles of overall autobiographical memories and strictly episodic ones highlighted the difficulty in retrieving truly

episodic memories compared with more generic autobiographical ones. Personal semantic memories are mostly associated with self or identity. Memories from childhood and early adulthood periods are distinctly self-defining (Addis & Tippett, 2004; Fitzgerald, 1988, 1996, 1999; Holmes & Conway, 1999). This time period are often referred as 'reminiscence bump' when more stable identities are developed and the interdependence between memory and identity seems to support the increased accessibility of autobiographical memories associated with these times periods (Fitzgerald, 1988, 1996, 1999). Generally, advanced dementia patients show poor retrieval of semantic self-knowledge that is associated with reduced identity strength (Haslam et al., 2011). From this study results, it is evident that patients with dementia shows preserved remote memories predominantly which are semantic in character (Butters & Cermak, 1986; Cermak, 1984; Warrington & Mc Carthy, 1988). Semantic self-knowledge might play a mediating role in the relationship between memory for autobiographical incidents and a strong sense of self (Haslam et al., 2011). In the case of normal older adults, reminiscence bump occurs between the ages of 10 and 30 years, possibly due to the fact that highly significant self-defining events might occurred during that time and became the focus of life review for them (Fitzgerald, 1996). Older people tend to 'dwell in the past', retaining vivid recollections of remote events from their early lives and evoking these in reminiscence in preference to more recent memories as suggested by Fitzgerald, (1988).

The memories found within the reminiscence bump significantly influenced to an individual's life goals, self-theories, attitudes, and beliefs (Conway et al., 2005). Additionally, life events that occur during the period of the reminiscence bump, such as graduation, career, marriage, or the birth of a child, are often very novel, thus, making them more memorable than other episodes of life. These memories are remembered best because they occur during a period of rapid change

followed by a period of relative stability (Rubin, Rahhal & Poon, 1998). A sense of identity develops during adolescence and early adulthood. Reminiscence bump is stronger for older adults than younger adults (Kawasaki, Janseen & Inoue, 2011). Events in adolescence are encoded more strongly than events that occur in other periods of life and because these events are initially stored more intensely, they will be retrieved more frequently (Kawasaki, Janseen, Chessa & Murre, 2005). Individuals with Alzheimer dementia are not able to form new memories after damage to the temporal lobes but they still have an access to remote memories that happened before the pathological changes occurred. Similarly, individuals with VaD and PDD often have confounding memories but are able to construct available autobiographical knowledge into plausible memories (Conway, 2003).

The transitional events were highly memorable, possibly these episodes often contained valuable information about how to succeed or at least to survive in one's life and served as a directive function for general life lessons (Pillemer, 1998). Memories of specific events were energizers, motivator and gives inspiration to life. Because the memory had been specific, detailed, and vivid, it continued to command attention and evoked intense feelings or wellness. Career was turning points in one's life which had been concrete episodes that were perceived to suddenly redirect a life plan. Similar to originating events, recurrent memories of turning points continued to focus and fuel the pursuit of new goals. It helped to provide valuable information regarding what would be positive and must be imbibed of, as well as, what should be avoided in the future. A recent study showed a reminiscence bump for people's memories of their happiest life events (Berntsen & Rubin, 2002). Happiness and positive life events in childhood and early adult life would probably influence the present moods or wellness which helped them to retrieve positive words. A pleasurable recollection of the past usually led to a positive and enjoyable

experience whereas retention of the negative events decreases gradually (Berntsen & Rubin, 2004). Childhood and early adult life was a transitional period which involved making choices for career or school and from this period the individual took control over his or her life (Arnett, 2000). Older adults may become better at managing emotions as a result of life experience (Carstensen et al., 2003; Labouvie-Vief, DeVoe, & Bulka 1989).

The present research, therefore, incorporates that the dementia groups irrespective of types shows deficits in AM and wellness than normal group. The four groups differed in terms of AM and wellness, with semantic memory better preserved than personal memory. In dementia groups, gender differences are significant in recent life section of autobiographical incident at present hospital. In normal group, gender effect is noticed in total score and first school of childhood personal semantic, early adult life personal semantic in wedding, recent life section of autobiographical incident at present hospital and Well Being scale. In dementia groups, total score of childhood personal semantic and early adult life of autobiographical incident in career was associated with wellness. In control, association is noted in first school of childhood personal semantic and early adult life autobiographical incident in career. AD, VaD, PDD have distinct patterns of autobiographical memory impairment according to the differences in brain pathology.

Impairment of autobiographical memory hampered the quality of life.