HEALTH LOCUS OF CONTROL

The concept of locus of control was developed from Rotter’s social learning theory (Rotter, 1966) and has been extended by Wallston et al. (1978) to cover the multidimensional aspect of health-related behaviour (Wallston, Wallston & de Vellis 1978). Locus of control was found to be a dominating factor in determining person’s behavior. The locus of control construct is an integral part of social learning theory (Rotter, 1954; Rotter, Chance & Phares, 1972). According to Folkman (1984) locus of control determines how a person will react to social, physical and emotional stressors and it can serve as a coping strategy for an individual in a crisis. In terms of social learning theory locus of control is a generalized expectancy pertaining to the connection between personal characteristics and or actions and experience outcomes. The social learning theory stated that an individual learns on the basis of his or her history of reinforcement. The individual will develop general and specific expectancies.

Through a learning process individual will develop the belief that certain outcomes are a result of their action(intervals) or a result of other forces independent of themselves (externals). From the social learning theory. Rotter (1954) developed the locus of control construct, consisting of an Internal External rating scale. Locus of control refers to the extent to which individuals believes that they can control events that effect them. Individuals with a higher internal locus of control believe that events result primarily from their own behaviour and action. Those with a high external locus of control believe that powerful others, fate, or chance primarily determine events. Those with a high internal locus of control have better control of their behaviour, tend to exhibit more political behaviours, and are more likely to influence other people than those with a high external locus of control; they are more likely to assume that their
efforts will be successful. They are more active in seeking information and knowledge concerning their situation.

Locus of control’s most famous application has probably been in the area of health psychology. Furnham and Steele (1993) reviewed scales to measure locus of control in the health domain. The most famous of these would be the Health Locus of Control Scale and the Multi dimensional Health Locus of Control Scale or MHLC (Wallston, Wallston, & De Vellis, 1978; Wallston, Wallston, Kaplan & Maides, 1976). Health Locus of Control was first popularized in the 1970s by Wallston, Wallston, Kaplan and Maides (1976), it examines the degree to which individuals believe that their health is controlled by internal or external factors. Wallston, Wallston, Kaplan and Maides (1976) identified that there was difficulty in predicting health behaviour specifically from generalized expectancy measures, the researchers identified through observations on newly diagnosed diabetic patients and their families that medical staff stressed the importance of the patient’s active role in his or her own health care, in other words professionals were trying to get the patients to adopt an internal locus of control. This initiated an interest in the developers to relate locus of control to health care situations. External beliefs refers to that one’s health outcome is under the control of powerful others (i.e. medical professionals) or is determined by luck, fate, or chance. Internal beliefs are characterized by one’s health condition as being the direct result of one’s own actions.

Researchers have defined health locus of control as the beliefs an individual has over the control of their health (Wallston, Greer, Pruyn, &Van Den Borne, 1990; Wallston, Stein & Smith, 1994). Health locus of control is the extent of an individual’s perceived control over health outcomes. The scale of Wallston et al. (1976) measures locus of control as ‘internal’, whereby people believe they are personally responsible
for their own health; ‘external–powerful others’, which is the belief that others, such as health professionals, are responsible for one’s health; and ‘external–chance’, whereby people believe that health depends on luck, fate or chance. Those with high internal locus of control are more likely to take control of their own health, seek health information and maintain physical well-being (Waller & Bates, 1992).

Health Locus of control construct is viewed as multidimensional as opposed to locus of control (Wallston, 1991; Wallston, et al., 1994; Wallston et al., 1978). Both of the constructs are composed of internal and external dimensions but health locus of control orientation is composed of internal, powerful others and chance factors. According to Wallston et al. (1994) health locus of control orientation is not only mediated by an individual’s behavior but it is an “indirect determinant of health status” (p.535). Health locus of control is an important component in social learning theory models designed to predict behaviors and cognitive processes relevant to mental and physical health. The multidimensional health locus of control scales were developed in the mid 20th century by Ken Wallston and colleagues. The scales are developed to assess an individual’s belief whether his or her health is determined by the actions of individuals (as opposed to fate, chance or luck) and if it is whether the locus of control is ‘internal’ i.e. determined by the person’s own actions or ‘external’ i.e. dependent on actions of other people.

Basically internal locus of control is the belief that events in one’s life whether they are good or bad are caused by factors which are controllable such as one’s attitude, effort and behaviour, in other words an individual believes that his/her behaviour is guided by his/her personal decisions and efforts. This concept is important when we try to make attributions for our behaviors e.g. if we say that our health is good, how would
we explain it? If we said that it was because we got lucky or that because of the doctor we are fine, then we would be exhibiting an "external" locus of control.

However, if we attribute our good health to our hard work, good lifestyle habits, and adherence to the treatment, we would be exhibiting an internal locus of control. People with internal locus of control are confident that their life experiences are determined by their own skills, ability and efforts. On the other hand people with external locus of control tend to believe that their life experiences are determined by sources beyond their control like chance, fate, luck or powerful others. Researches have investigated the relationship between locus of control beliefs and mental and physical health. For example Holder and Levi (1988) found that college students who were more external locus of control (Powerful Others and Chance) had higher scores on the SCL-90-R subscales. Researches have shown that persons with high internal locus of control are more efficient in coping than people having high external locus of control. (Selander, Marnetoft, Akerstrom & Asplund 2005; Holder & Levi 1988; Wu, Tang & Kwok 2004).

A great amount of research has linked internal locus of control to different health beliefs, internal health locus of control is found to be associated with ability to stop smoking (Coan, 1973), ability to lose weight (Balch & Ross, 1975), adherence to medical regimen (Lewis, Morisky, & Flynn, 1978), knowledge about disease (Seeman & Evans, 1962), effective use of birth control (MacDonald, 1970).

People with internal locus of control attribute consequences of events to their own control but on the other hand people who have external orientations attribute the consequences of events to external circumstances. Rodin (1986) highlighted that an individual with high perceived control may have better health as he/she is more likely
to take health enhancing actions, in other words perception of control affects whether an individual tries to manage their own health problems or not. Diabetics with internal locus of control adhere more to their regimen as compared to diabetics who have an external orientation. It has been found that cultural and societal factors often can influence health control beliefs of people (Helman, 1990; Marks, 1998; Schulz & Heckhausen, 1999; Sun & Stewart, 2000). Studies have found that people from cultures like China and Japan tend to have more family orientation and thus, they show more external locus of control than people from cultures like America which is more individualistic (Padilla, Wagatsuma & Lindholm, 1985; Wong & Piran, 1995).

Studies over the last several years demonstrated that an internal sense of personal control is related in positive ways to psychological and physical adaptation to illness as well as engagement in beneficial health behaviors (Affleck, Tennen, Pfeiffer, & Fifield, 1987; Shapiro, Schwarz, & Astin, 1996). Several studies have shown the importance of internal health locus of control in management of health. Internal locus of control was found to have a mediating effect on interventions geared to health promotion, risk reduction and improve attitude towards a chronic or acute health condition (Bachrach, Huesmann & Peterson, 1977; Cross, March, Lapsley Byrne, & Brooks, 2006; Haslam & Lawrence, 2004; Seeman & Evans, 1962). Studies have shown that persons with a high internal locus of control are much more capable of coping with their problems than persons with a high external locus of control (Wu, Tang & Kwok, 2004, Holder & Levi, 1988, Selander et al., 2005).

Wallhagen, Strawbridge, Kaplan and Cohen (1994) examined the relationship between baseline internal health locus of control and 6-year change in physical functioning in a sample of 356 older adults. They found that internal health locus of control was significantly related to change in physical functioning for women at all
levels of baseline functioning but in men internal health locus of control affected lower baseline functioning, no relationship was found between internal health locus of control and health seeking activities except changing eating patterns when sick. The researchers concluded that internal health locus of control in both the genders is related to the importance placed on good health.

Seeman and Seeman (1983) examined health behaviour in three domains i.e. preventive care, health knowledge and perspective, and physical status like chronic and acute illness. They interviewed a representative metropolitan sample. The findings suggested that a sense of low control was significantly associated with less self-initiated preventive care, less optimism concerning the efficacy of early treatments, poorer self related health, more illness episodes, greater dependence upon the physician and more bed confinement. These relationships were meaningfully different for men and women.

Wu, Tang and Kwok (2004) studied the associations between self-efficacy, health locus of control and psychological distress in 159 elderly Chinese women who had chronic physical illnesses. Their findings showed that internal locus of control was linked to general self – efficacy. Norman, Bennett, Smith and Murphy (1998) measured health locus of control, health value, and a number of health behaviours on 11,632 people as a part of the 1989 Health in Wales’s survey. They formed health behaviour index comprising of measures of smoking, alcohol consumption, exercise and diet representing Key ‘life style’ indicators. The findings revealed that scores on this measure were positively associated with internal health locus of control, and negatively associated with scores on the chance and powerful others. They found that ‘Pure internals’ performed the most health behaviours.

On the other hand those who have external locus of control regard events to be mainly outside their jurisdiction. There is significant evidence that anxiety and
depression are associated with an external locus of control (Burger, 1984; Dyal, 1984; Ganellen & Blaney, 1984; Joe, 1971; Molinari & Khann, 1981; Strickland, 1977). It has been found that patients with chronic pain and external locus of control do not believe in recovery and report poor ability to control and reduce their pain (Gustaffson & Gastoh- Johansson, 1996), on the other hand those with internal locus of control may develop strategies to deal with pain, so they report lower pain intensity. (Crisson & Keefe 1988). Externals are less likely to learn from past experiences, and they have difficulty in persisting in tasks (Dundon, 2006). Selander et al. (2005) reported that socio-cultural factors may contribute to Locus of control beliefs and to the extent this phenomenon concerns to mental health and psychopathology.

**Health Locus of Control and Health Status (HRQOL)**

Some studies have assessed diabetes regimen by using health locus of control theory. Rodin (1986) reported that an individual with high perceived control may have better health because he or she is more likely to engage in health promoting behaviours, in other words enhancement of an individual’s perceived control over his or her health leads to improved personal control. Patients having diabetes follow their regimen more strictly if they experience an increase in internal locus of control. Watkins et al. (2000) found that increased perceptions of control and understanding of diabetes were associated with less interference with social and personal functioning, fewer negative feelings and more positive attitude in both Type 1 diabetes mellitus and type 2 diabetes mellitus. Eiser et al. (2001) found that well-being and reduced interference with everyday activities were related to perceived control in type 1 and type 2 diabetic patients. Hampson, Glasgow and Foster (1995) found that in type 2 diabetes mellitus patients’ perceptions of internal cause and treatment effectiveness were the patients’ representations dimensions most strongly associated with HbA1C.
Macrodimitris et al. (2001) studied the relationship between perceived control and HbA1C levels in 115 type 2 diabetic patients. Results showed that perceived control was negatively related to HbA1C levels. High perceived control has a positive effect on individuals with type 2 diabetes as shown by lower HbA1C levels. Tillotson and Smith (1996) conducted a study to examine how psychosocial factors influence regimen adherence behaviour. The aim of the study was to assess the ability of internal diabetes control and social support to predict adherence to a weight control regimen among persons with non insulin dependent diabetes in a sample of 465 patients. The results showed that internal locus of control and social support were significant predictors of regimen adherence. O’hea et al. (2005) investigated the interactions between five dimensions of health locus of control beliefs and their relationships with medical regimen adherence in low income individuals diagnosed with type 2 diabetes, 109 patients completed Multi dimensional health locus of control scale. The findings suggested that health locus of control may be meaningfully related to medical outcomes.

Morowatisharifabad, Mahmoodabad, Baghianimoghadam and ToneKaboni (2010) conducted a cross-sectional study on 120 patients, they used an Iranian version of Diabetes Locus of Control and Diabetes Self-Care Activities scale. The results indicated that men had more internal locus of control and women revealed more chance locus of control. External locus of control increased by age, while the internal locus of control increased by education level but they found that chance locus of control decreased by educational level. The researchers found a positive relationship between internal locus of control and adherence to diabetes regimen and there was negative association between chance locus of control and adherence to diabetes regimen.
Gillibrand and Stevenson (2006) investigated the experience of diabetes in young people with in the theoretical framework of the extended health belief model (EHBM), 118 patients of type 1 diabetes between the age of 16-25 years participated in the study. Results showed that high level of family support and low locus of control beliefs in powerful others to control their diabetes reduce the young person’s perception of severity and vulnerability to diabetes related complications. They found that high internal locus of control beliefs and high levels of self-efficacy predicted the benefits of adhering to the self-care regime, high levels of family support also predicted adherence to self-care regime. Lee (2003) studied health behaviours in people with serious mental illness. The role of illness cognition, optimism, and health locus of control on diabetes. Their study examined the relationship between intraindividual variables and health locus of control and coping styles in predicting a range of health behaviours/outcomes including health status as well as diabetes specific health status. They found that independent variables were significant predictors on the general health status. Optimism and internal health locus of control variables was found to be significant only with general health status measures. Surgenor et al. (2000) investigated the relationship between multiple “sense of control” variables as measured by the Shapiro Control Inventory, metabolic control, and selected demographic and clinical variables in 96 women, ages 17-50 years with diabetes mellitus. The results showed that optimal metabolic control was significantly associated with experience of loss of psychological control and feelings of inadequacy. Poor metabolic control was significantly associated with reduced control in the specific domains of interpersonal relationships and bodily functions.

Pibernik-Okanovic et al. (2004) conducted a study aimed at determining impact of an empowerment based psychosocial intervention on the patient’s quality of life and
glycemic control as compared to patients in standard care. Recruited type 2 diabetic patients, scheduled for their regular check-ups, were individually acquainted with empowerment based principles and invited to participate in an empowering psychosocial course. The treated patients reported their quality of life to be improved and their glycemic control also improved and remained so after 3 & 6 months follow-up periods, still being in a category of poor control. Better educated patients believing in internal health control and efficacy of diabetes treatment seemed to benefit the most.

Lou and Zhang (2006) evaluated the effectiveness of a participatory empowerment group (PEG) for Chinese type 2 diabetes patients. Before the intervention scores on blood sugar and quality of life did not differ significantly between the experimental group and control groups, but after the intervention patients in the experimental group scored higher on quality of life and lower on blood sugar level compared to the control group. Thus, it was found that participatory empowerment group (PEG) was effective in enhancing the quality of Chinese type 2 diabetes patients.

A number of studies have shown that health locus of control effects health related quality of life / quality of life in patients. Health locus of control and quality of life were associated in prior research studies (Burckhardt, 1985; Lewis, 1982; Padilla & Grant, 1985). In each of these studies, health locus of control was viewed as one of the several variables thought to influence perceived quality of life.

Keers et al. (2004) developed a Multidisciplinary Intensive Education Program (MIEP) to help patients achieve their treatment goals which included adequate self-management, glycemic control and quality of life. The objective of the study was to determine the effects of MIEP and its mechanism of influence. The program consisted
of 12 days group sessions and individual counseling. 51 people participated in the study whose measures were taken on blood glucose (HbA1C), quality of life, health locus of control, distress and knowledge at baseline and 3 months follow up. The results showed HbA1C and knowledge improved significantly, patients rated themselves healthier, and were more internal and less powerful others oriented. The researchers concluded that locus of control significantly contributed in effects on quality of life.

Okanovic, Prasek, Filipovic, Renar and Metelko (2004) determined the impact of an empowerment based psychosocial intervention on the patients’ quality of life and glycemic control as compared to patients in standard care. They recruited type 2 diabetic patients and the patients were invited to participate in an empowering psychosocial course. The patients who were treated reported their quality of life to be improved after they completed the course regarding its psychological and social aspects, their glycemic control also improved. The researchers found that empowerment – based psychosocial intervention in type 2 diabetic patients positively affected the diabetic patients’ quality of life and improved their metabolic control. The better educated patients who believed in the internal health control and efficacy of diabetes treatment seemed to benefit the most.

**Resilience**

People face various traumatic events and challenging life experiences, some people succumb to these circumstances of life while others bravely face these hard circumstances and challenge them to adapt well over time to changing life situations, these people are called as resilient. Being resilient does not mean that a person does not experience distress or difficulty but it means that a resilient individual is better able to cope with the difficulty or distress. McCubbin (2001) described that resilience can be
considered as a construct that moderates the relationship between risk factors and outcome variables.

Emmy Werner was one of the first scientists to use the term Resilience in the 1970s. She studied a cohort of children from Kauai, Hawaii. Kauai was quite poor and many of the children in the study, grew up with alcoholic or mentally ill parents, many of the parents were also unemployed (Werner, 1971). Werner observed that of the children who grew up in these bad situations, two-third exhibited destructive behaviors in their later teen years, but one-third of these children did not show destructive behaviors, Werner called the later group as ‘Resilient’.

Haase (2004b) recognized resilience as a complex and multidimensional construct. Some researchers considered resilience to be inborn in individuals, resilience has been viewed as a personality characteristic that moderates the negative effect of stress and promotes adaptation. (Ahern, Kiehl, Sole, & Byers 2006; Wagnild & Young 1993). Resilience is viewed as a driving force developed by positive characteristics such as hope, optimism, courage, and wisdom (Bradshaw, Richardson & Kulkarni 2007a). Rutter (1985) observed that resilient people demonstrates some basic characteristics like engaging the support of others, they show action oriented approach, adaptability to change, sense of humour, realistic sense of control, past successes, self-efficacy, strengthening effect of stress, personal or collective goals and secure attachment to others. Wagnild and Young (1993) described that older individuals with resilience have five important characteristics: equanimity, meaningfulness, perseverance, existential aloneness and self-reliance.

According to Lyons (1991) the most important features of resilience are patience and tolerance of negative effect. McCubbin (2001) defined resilience as an
outcome that can be divided into two groups: poor outcomes and positive outcomes. Poor outcomes are observed in vulnerable groups where as positive outcomes are found in invulnerable groups. (McCubbin, 2001).

Other researchers described resilience as a process, Schoon (2006) explained resilience as a dynamic process whereby individuals show adaptive functioning in the face of significant adversity. Masten (2001) defined resilience as “a class of phenomenon characterized by good outcomes in spite of serious threats to adaptation or development.” (p.228). According to Richardson (2002) resilience is “the process of coping with stressors, adversity, change or opportunity in a manner that results in the identification, fortification, and enrichment of protective factors” (p.308).

Mancini and Bonanno (2006) reviewed three key points about resilience that (1) resilience is different from the process of recovery,(2) resilience in the face of loss or potential trauma is common (3) there are multiple and sometimes unexpected pathways to resilience. Basically as discussed there are three ways of defining resilience: as a personality characteristic, as an outcome, or a process. But a large number of literatures on resilience have suggested that resilience is a personality characteristic. (Ahern et al., 2006).

**Resilience, Risk Factors and Protective Factors**

Theory of resilience points out that there is a complex interplay among risk factors, protective factors, adaptive outcomes, and resilience. Risk factors and protective factors are the two important components of resilience theory, which are associated with the growth and resilience in individuals. Murray (2003) explained risk factors as biological, environmental, and psychosocial hazards which improve the likelihood of maladaptive outcomes. Murray (2003) further highlighted that risk factors
are the most important aspects in the theory of resilience and risk factors can affect negatively the development and can also increase the likelihood of poor outcome status.

On the other hand protective factors are also very important elements of theory of resilience. Haase (2004a) described protective factors as the individual, family, social or other contextual factors that help or promote resilience processes or outcomes. Protective factors can be divided into various domains, according to Kaplan, Turner, Norman, and Stillson (1996) protective factors consist of individual, family, school, and environmental domains. On the other hand according to Place, Reynolds, Cousins and O’Neill (2002) children who are resilient have protective factors within three domains which include individual protective factors, family protective factors, and community protective factors.

According to Karen Leigh, Edward and Warelow (2005) protective factors are a part of an individual’s general make-up, they further elaborated that some of these factors are considered genetic, such as personality that is out-going and social, but many protective behaviors can be learned. The researchers concluded that resilience and emotional intelligence can be developed through support and education. King et al. (2003) examined the nature of resilience in people with chronic disabilities and they identified some protective factors like perseverance and determination and spiritual beliefs, they also identified three new protective factors, which include replacing a loss with a gain (transcending), recognizing new things about oneself (self-understanding), and making decisions about relinquishing something in life. (Accommodating).

Aronowitz (2005) conducted a study with the objective to understand the process by which adolescents develop resilience and alter their risk behaviours in the presence of several stressors. Their sample consisted of 32 individuals (28 adolescents
and 4 adults). The researchers found that by setting higher expectations for them and by feeling self confident the adolescents become resilient despite multiple stressors in their environment. It was reported by Stewart, Reid, and Mangham (1997) that when risk factors are greater than protective factors, people who have been resilient in the past may be defeated. Kinsel (2005) discussed factors that are responsible for promoting resilience in older women. They interviewed 17 women between 70 to 80 years of age; the researchers identified seven factors salient to resilience in the sample, the factors included were external resources of social connectedness and internal resources including a “head-on” approach to challenge and spiritual grounding. They found that of central importance in women’s lives were curiosity and extending self to others.

**The Model of Resilience**

Haase, Heiney, Ruccione, and Stutzer (1999) developed the Adolescent Resilience Model (ARM). The model was tested to comprehend the processes and outcomes of resilience in adolescents suffering from cancer and other chronic diseases (Haase et al., 1999), the researchers’ hypothesized three kinds of protective factors which can positively influence outcomes, which includes: individual protective factors, family protective factors and social protective factors. They also hypothesized that risk factors have negative influence on the outcomes, which includes: individual risk factors, and illness-related risk factors. They explained resilience and quality of life as an outcome variable; risk factors were viewed as opposite to protective factors and both were assumed to have an impact on resilience.

Vinson (2002) developed a children model of resilience to recognize the association between family environment, specific child characteristics, threat appraisal, coping patterns, and adaptive outcomes. The study was conducted on 235 children with
asthma. The researcher based the concept of resilience on the various researches of vulnerable children, who were at risk for negative outcomes, in which protective factors helped to buffer the effects of risk and impact positive adaptation. Family environment, child characteristics, threat appraisal and coping patterns were viewed as protective factors which buffer the effect of stress. Health related quality of life was found to be an outcome variable and affects illness indices. Quality of life was found to be indirectly influenced by children characteristics like sense of coherence, internal locus of control, and self-regard.

Murray (2003) developed a model of resilience in which resilience was described as a dynamic process; the model had been used to study the relationship between risk factors, protective factors, resilience, and post school outcomes among youth with high incidence disabilities. Individual characteristics and experience within the context of community, family school and peers can help in shaping the developments and outcomes within this model of resilience. The contexts mentioned above can be considered as risk factors as well as protective factors. Protective factors increase the likelihood of healthy development or promote healthy development; on the other hand risk factors can negatively affect healthy development. It was assumed that risk factors and protective factors both have an impact on the outcome status for at-risk students and a dynamic interactive relationship exists among protective and risk-factors. Murray (2003) described resilience as a process in this model.

A Systematic View of Resilience

Relational perspective has been emphasized in the research on individual resilience. Research on at-risk children have indicated that the most significant positive influence is a close caring relationship with a significant adult with whom the children
could identify or relate and from whom they could gather strength to confront and overcome their hardships (Werner 1993). Hauser (1999) pointed out that we become aware of the fact that resilience is woven in the web of relationships and experience over the span of life and across the generations.

An ecological perspective of resilience takes into account the many spheres of influence in resilience and risk over the span of life. Rutter (1987) emphasized that to comprehend and develop resilience as well as protective mechanisms, we must look at the interplay between occurrences within families and the political, social, and racial climates in which individuals and their families thrive or perish.

Another perspective of resilience is developmental perspective, mostly stress is not short-term, but requires long-term adjustment because of difficult hanging situations, so it is important to have different coping strategies to meet different and difficult life challenges appropriately. Boss (2001) reported that stressful life events are more likely to negatively affect functioning when they are unexpected, or when a condition is severe or persistent. Similarly according to Neugarten (1976) events that occur “off time” or not as expected are also much difficult to handle. Longitudinal studies following individuals through adulthood found that resilience can’t be assessed on the basis of early life experiences or interactions.

Werner and Smith (1982, 1992) conducted a longitudinal study of resilient children and emphasized that earlier researches focused less on the maternal influence and the damage of one parent in the nuclear household and ignored the importance of sibling relationship and of the significant others in the extended family. They noted that the role of wide variety of supportive relationships was crucial at every stage of life. They found that few people identified to be resilient at the age of 18 developed
significant problems by the age of 30. They concluded that resilience could be
developed at any point over the entire life span, through such findings we can conclude
that people with troubled pasts have the potential to turn their lives around throughout
adulthood, and that a crisis can become a positive turning point. Masten et al. (1990)
supported the Werner and Smith’s conclusion that the effect of relationships formed by
extended family, friends, and neighbors have the beneficial effect.

A special issue of the American Psychologist described the resilient qualities.
The resilient qualities described included happiness (Buss, 2000), subjective well being
(Diener, 2000), optimism (Peterson, 2000), faith (Myers, 2000), self determination
(Ryan & Deci 2000; Schwartz, 2000) Wisdom (Baltes & Staudinger, 2000), excellence
(Lubinski & Benbow, 2000), and creativity (Simonton, 2000).

The invaluable contribution of the first wave of resiliency inquiry helped to
recognize the resilient qualities that help people to recover from adversity or hardship.
Resiliency then was defined as the process of coping with adversity, change,
opportunity in a way that results in the identification, fortification and enrichment of
resilient qualities or protective factors .On the other hand the second wave of resiliency
inquiry was a quest to discover the process of achieving the identified resilient
qualities. The second wave of resiliency inquiry was an endeavor to answer the
question, how are resilient qualities acquired? Richardson et al. (1990) proposed a more
detailed process of accessing resilient qualities as a function of conscious or
unconscious choice. Resilient reintegration refers to the coping processes that result in
growth, knowledge, self-understanding and increased strength of resilient qualities.

To cope with hardships of life, human beings develop through life stressors or
disruptions resilient qualities, so that most events become routine and less likely to be
disturbing or disruptive. People learn to drive, make a living, cook food and take care of personal needs without significant disruption. Disruptions results in primary emotions that lead to introspection. Hurt, loss, guilt, fear, perplexity, confusion and bewilderment are some common primary emotions that surface in the immediate wake of disruption. Resilient reintegration is an introspective experience in identifying, accessing, and fostering resilient qualities.

The concept of resilience resulted from the third wave of resiliency inquiry. It is now clear that in the process of reintegrating from disruption in life, some amount of motivational force within everyone that drive them to pursue wisdom, self-actualization, and altruism and to be in conformity and harmony with a spiritual source of strength. Resilient reintegration needs energy to grow, and the source of the energy is an innate resilience. The questions that lead to the third wave of resiliency inquiry were what and where is the energy source or motivation to reintegrate resiliency.

Summary of three waves of Resiliency Inquiry

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<thead>
<tr>
<th>Wave</th>
<th>Description</th>
<th>Outcome</th>
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<tr>
<td><strong>First Wave:</strong> Resilient Qualities</td>
<td>Phenomenological descriptions of resilient qualities of individuals and support systems that predict social and personal success.</td>
<td>List of qualities, assets, or protective factors that help people grow through adversity (i.e., self-esteem, self-efficacy, support systems, etc)</td>
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<tr>
<td><strong>Second Wave:</strong> The Resiliency Process</td>
<td>Resiliency is the process of coping with stressors, adversity, change, or opportunity in a manner that result in the identification, fortification, and enrichment of protective factors.</td>
<td>Describe the disruptive and reintegrative process of acquiring the desired resilient qualities described in the first wave; A model that helps clients and students to choose between resilient integration. Reintegration back to the comfort zone or reintegration with loss.</td>
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<tr>
<td><strong>Third Wave:</strong> Innate Resilience</td>
<td>Postmodern multi-disciplinary identification of motivational forces within individuals and groups and the creation of experiences that foster the activation and utilization of the forces.</td>
<td>Help clients and students to discover and apply the force that drives a person towards self-actualization and to resiliently reintegrate from disruptions.</td>
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Resiliency theory stresses that there is a force within everyone that drives them to seek self-actualization, altruism, wisdom and harmony with a spiritual source of strength.

**Theories of Resilience**

Epel, McEwen & Ickovics (1998) focused on physical thriving, physical thriving occurs when there is a more amount of anabolic (e.g. growth promoting) than catabolic (e.g. cortisol) hormones. Properties of stressor (e.g. frequency, duration, controllability) as well as the psychological moderators such as one’s appraisal of the stressor (i.e. as a challenge or threat) play a role in influencing the response to stress. When a person appraises an intermittent stressor as controllable by him or her, the person shows a resilient profile of stress hormone responding i.e. rapid cortisol responses with fast recovery, and more importantly, cortisol adaptation when faced with similar stressors over time. This response to stress is in turn associated to better health. The cortisol adaptation to stress may serve as one potential marker of resilient physical and psychological functions.

Garmezy and Colleagues (1984) conducted the Minnesota Risk Research Project, which studied intentional and informational processing dysfunction in children of schizophrenic parents from 1971-1982. The researchers found that most of the children did not grow to be maladaptive adults but they showed warmth and confidence in adulthood. Garmezy’s “Confident” criteria were effectiveness (work, play and love), high expectancies, positive outlook, self-esteem, internal locus of control, self-discipline, good problem solving skills, critical thinking skills, and humor. Garmezy’s resiliency triad comprised of personality disposition, a supportive family environment, and an external support system. The researchers outlined three complementary models from these studies, each of the model showing a particular class of factors to describe
the relationship between stress and adaptation. The first is compensatory model; a compensatory factor is one that neutralizes exposure to risk. It has a direct and independent affect on the outcome of interest. Both compensatory factor and risk contribute additively to the prediction of outcome. Compensatory factors may act as an aid to solving problems of life, a tendency to perceive or construct experiences positively, even if those experiences give rise to pain and distress, the ability to gain positive attention from others and reliance on spirituality to maintain a positive outlook of a purposeful life.

The second model was the challenge model, the risk factor or a stressor is taken as a potential enhancer of successful adaptation provided that it is not excessive. Stress which is too low is not challenging and very high levels of stress causes malfunctioning. Moderate amount of stress give a challenge that when overcome, increases competence. If a person successfully accomplishes the challenge, it helps in preparing the person to confront the next challenge with confidence. If a person fails to confront a challenge he/she may become increasingly vulnerable to risk. The third model was the protective factor model. According to this model a protective factor interacts with a risk factor to reduce the chances of a negative outcome. It reduces the effect of exposure to risk. Rutter (1987) described a protective mechanism as an interactive process that helps identify “multiplicative interactions or synergistic effects in which one variable potentiate the effect of another” (p.106). Protective factors include high IQ and better cognitive abilities related social know-how, better parenting, and high socio-economic status.

This force is known as resilience and depending upon the discipline it has variety of names. Werner and Smith (1992) referred to resilience as an innate “self-righting mechanism” and according to Lifton (1994) resilience is the human capacity of
all individuals to transform and change – no matter their risks. Luther and Cicchetti, (2000) understood resiliency as the display of positive adaptation in the face of adversity. According to Brooks (1994) resilience is a dynamic process successfully adapting to stressful life events not a static characteristic or attribute of an individual.

According to Tebes et al. (2004) individuals often report positive, transformative changes in response to adversity, cognitive transformation involves a turning point in a person’s life characterized by, (1) the recognition that coping with adversity resulted in new opportunities; and (2) the reevaluation of the experience from one that was primarily traumatic or threatening to one that is growth promoting. Cognitive adaptation often shows enhanced adaptation to adverse circumstances and so is a mark of resilience. Tebes et al. (2004) conducted a study to examine the relationship of cognitive transformation to indicators of resilience among 35 acutely bereaved young adults and a non-bereaved comparison group. The findings of the study strongly supported the hypothesis that transformation predicts resilience and may reduce one’s risk trajectory to enhance adaptation.

Resilience and Health Status (HRQOL)

Resilience is likely to influence health status and quality of life. According to Connor and Davidson (2003) resilience embodies personal qualities that help individuals to thrive despite adversity. According to Kaplan (2002) resilient people are more likely to use adaptive coping strategies and thus, are more likely to engage in health promoting behaviours. Resilience has been shown to have a positive relationship with physical and subjective health status in survivors of violent trauma (Connor, Davidson & Lee 2003). According to Connor et al. (2003) psychological resilience is a modifiable construct that is amenable to enhancement with treatment and that such
treatment would be of particular use in producing improvements in subjective health status. (Connor & Davidson 2003). Wells (2010) found that in older adults’ strong social ties, lower household income, and good mental and physical health status were significantly associated with high resilience levels. Smith et al. (2004) examined whether optimism and health related hardness contribute to health and well-being among older women. They used data from 9501 Australian women aged 73 to 78; they found that optimism and health-related hardness explain a significant proportion of variance in all sub-scales of the sf-36 and in stress. The data suggested that positive personal characteristics may contribute to well-being. Positive psychological characteristics, including optimism, and health-related hardness, are correlated with good self-related health, but these variables are all affected by socio-economic status, social-support, physical illness and access to services. Mental health status was most strongly associated with resilience in older adults. Black and Gilboe (2004) found a moderate positive relationship between mothers’ resilience and both family health work and mothers’ health promoting lifestyle practices. Wagnild (1997) found that participants who reported better health status and greater resilience were more likely to practice healthy lifestyle behaviours. Shen and Zeng (2010) showed that resilience was significantly associated with reduced mortality risk among the young-old and oldest-old Chinese, they concluded that effective measures to promote resilience are likely to have a positive effect on longevity of the elderly in China. Researchers have found that resilience influences health related quality of life in chronic diseases. Vinaccia and Quiceno (2011) found a positive correlation between resilience and mental health in patients suffering from chronic obstructive pulmonary disease.

Past researches had shown that resilience affects the health status of people suffering from diabetes. Sells et al. (2009) conducted a qualitative study of 33 adults
with multiple chronic illnesses; they gathered data on past accounts of onset of illness, loss due to illness, as well as present accounts of social support and adaptation. The researchers found that participants responses showed illness onset as a virtual cascade of medical, emotional and social hardships which leads to loss and accompanying adaptation through personal resilience and especially, available social support. The researchers concluded that the experience of multiple chronic illnesses involves challenges to personal identity and the advantages of social support from and to others.

Yorgason et al. (2010) interviewed 28 older couple in which one spouse was diagnosed with osteoarthritis and diabetes, they investigated illness perception and coping activities related to management of illness and relationship resilience. The findings of the study suggested that couple experience negative as well as positive illness perceptions suggestive a balance between the optimistic outlook about the future and reality of the challenges of their illness.

Navuluri (1998) conducted a descriptive correlation study to determine the relationship between health-related hardiness, patient attitude towards compliance, and self-care adherence to physical activity among 155 adults having diabetes. The findings revealed that health related hardiness was significantly positively correlated with self care adherence to physical activity. Significant correlations were found between commitment/ challenge and self care adherence. Non-significant correlations were found between control and self-care adherence in the sample.

Bradshaw et al. (2007) conducted a randomized design to test the efficacy of resiliency training approach for people having diabetes, who earlier received standard diabetes self-education, they used repeated measures comprising of 67 participants assigned to treatment (n=37) or the resiliency classes (n=30). Outcomes variables in the
study included glycosylated hemoglobin, waist measurement, eating and exercise habits and self-efficacy, locus of control, purpose in life and social support as psychosocial measures. The results showed that treatment groups had higher levels of resiliency as they showed positive ways of coping with distress due to diabetes, they knew enough about themselves to make right diabetes choice, eating healthier, having fun in life and increase in physical activity as compared to control group.

Steinhardt et al. (2009) conducted a pilot study to determine the effectiveness of a Diabetes Coaching Programme (DCP) developed by the authors’ and adapted for African American adults with type 2 diabetes. They used 1 group- pretest posttest design, the convenient sample comprised of 16 African American (8 men and 8 women) having type 2 diabetes but 12 subjects completed the programme. Psychosocial process variables included resilience, coping strategies and diabetes empowerment. Perceived stress, diabetes self management and coping strategies were used as proximal outcomes. Distal outcomes included body mass index (BMI), HbA1C, fasting blood glucose, lipidemia, blood pressure. Statistically significant improvement were found in diabetes self management, diabetes empowerment, HbA1C, BMI, low-density lipoprotein cholesterol, total cholesterol, and systolic and diastolic blood pressure.

Jaser and White (2010) studied that how the use of specific coping strategies affects resilience in adolescents with type 1 diabetes. Thirty adolescents with type 1 diabetes between the age of 10 and 16 years completed questionnaire along with their mothers on adolescents’ coping strategy use, competence and quality of life. The results showed that greater use of primary control coping strategies like problem solving and emotional expression was associated with higher competence scores, better quality of life. Lower competence and poorer metabolic control were linked to disengagement coping strategies like denial or withdrawal.
Huang (2009) found that resilience was positively associated with coping strategies, social support, health related quality of life (HRQOL), and diabetes related self care behaviours.

Yi et al. (2008) conducted a longitudinal study to investigate the buffering role of resilience on blood sugar control and self care behaviour in a sample of 111 patients with diabetes. Resilience was defined as a factor score of self-efficacy, self-esteem, self-mastery and optimism. Results showed that resilience demonstrated a buffering role between HbA1C levels and diabetes-related distress among type 1 and type 2 diabetic patients. Patients with low or moderate resilience levels showed a strong association between rising distress and worsening HbA1C across time, but they found that patients with high resilience did not show the same associations, low resilience accompanied by high distress is associated with fewer self-care behaviours.

Frazier et al. (2010) investigated resilience resources and coping profiles of diabetic patients. 145 patients with diabetes completed COPE and coping style questionnaire and personal resources. Glycosylated hemoglobin was also assessed, the researchers found that maladaptive coping subscales were negatively associated with resilience, among the adaptive coping subscales; only acceptance, emotional support and pragmatism were positively associated with resilience. The results also showed that resilience groups did not differ in HbA1C levels. The study demonstrated a link between maladaptive copings and low resilience, showing that resilience impacts one’s ability to manage the difficult treatment and lifestyle requirement of diabetes.

DeNisco (2011) did a cross-sectional study to describe the relationship between resilience scores and glycosylated haemoglobin (HbA1C) levels in African-American women with type 2 diabetes. Demographic data were collected from a voluntary sample
of 71 African-American type 2 diabetic women. The researchers used Wagnild and Young resilience scale. The results showed that majority of the women were resilient. Also HbA1C levels and resilience scores had a negative significant correlation.

Mamerow (2008) conducted a six-month pilot study to determine the feasibility of resilience and diabetes self-management intervention, The Diabetes Coaching Program: Transforming Lives Through Resilience Education, in a convenience sample of African American adults (n=16) with Type 2 diabetes mellitus. The intervention included four weekly resilience and diabetes education classes and eight bi-weekly support group sessions. Survey data and blood samples were collected at baseline and at six months. Twelve participants completed the study (75% retention). Results indicated that higher perceived stress scores were associated with less resilience, fewer adaptive coping skills, lower self-leadership, lower diabetes empowerment and greater depressive symptoms. The result indicated that researchers’ intervention has the potential to improve diabetes self-management among African Americans with Type 2 diabetes mellitus and increase positive health outcomes.

Brown, Fouche and Coetzee (2010) identified factors that enable the families of type 1 diabetic child to adapt. The study was triangular in nature, with an exploratory, descriptive approach; non-probability purposive and snowball sampling techniques were employed. Sixteen families participated in the research. A biographical questionnaire which included an open-ended question, to be completed in written format, was used in conjunction with seven structured questionnaires to gather relevant data. These seven structured questionnaires were an operationalisation of some of the key, concepts and processes of the Resiliency Model. The results highlighted various resilience factors including family time and routines, communication, hardiness, the acceptance of the diabetes, adherence to a treatment regimen, the obtaining of
knowledge and skills, and working together as a family unit in managing the diabetes. The researchers concluded that family plays a powerful role both in the treatment of chronic illness and in paediatric practice.

Winsett, Stender, Gower and Burghen (2010) studied the effect of a diabetes camp on participants, a descriptive comparative pilot study was undertaken. Adolescents 10 to 16 years of age with Type 1 diabetes attending a residential diabetes camp (N = 81) were recruited to explore the concept of self-efficacy and resilience, two possible mediators influenced by attending camp. Overall, self efficacy and resilience scores were moderately high. No differences were found in outcome measures for gender or mode of insulin therapy; however, African Americans scored significantly higher for diabetes self-efficacy and resilience. Subjects living with one parent had poorer glycosylated hemoglobin (HbA1C) but scored better in resilience. No association for years of camp attendance and study outcomes were identified.

**Perceived Social Support**

The concept of social support has also emerged as the moderator and mediator of stress. Social support refers to the perceived comfort which includes caring, esteem or help a person receives from other people or groups (Cobb, 1976; Gentry & Kobasa, 1984; Wallston et al., 1983). According to Cobb (1976) people with social support believe they are loved and cared for, esteemed and valued, and that they are a part of a social network, such as a family or community organization, that can provide goods, services and mutual defense at times of need or danger. According to Caplan’s theory (1974), social support implies enduring pattern of continuous or intermittencies that play a significant role in maintaining the psychological and physical integrity of individual over time. Social support means having friends and other people, including family, to turn to in
times of need or crisis to give us a broader focus and positive self-image. Social support enhances quality of life and provides a buffer against adverse life events. Social support can be affective as in emotional support, advice and positive feedback, or instrumental as in material aid and giving physical help. Social support has been defined in a number of ways; Wills (1985) has defined social support-

**Esteem support**- Esteem support occurs through people’s expression of positive regard for person encouragement and agreement with the individuals’ ideas or feelings, and positive comparison of the person with others, such as people who are less able or worse off. Whereby other people increase one’s own self-esteem. Esteem support is particularly useful during the appraisal of stress, such as when the person assesses whether the demands increases his or her personal resources.

**Informational support**- whereby other people are available to give advice. Information support includes giving advice, directions, suggestions or feedback about how the person is doing.

**Social companionship**- which involves support through activities.

**Instrumental support**- which involves physical help. This type of support involves direct assistance, as when people give or lend the person money or help out in the times of stress.

Social Support consists of interpersonal transactions and it includes emotional support, instrumental support and informational support. (DesRosier, Catanaro & Piller 1992; House 1981; Gulick, 1994; Kahn & Antonucci 1980; Olson & Shultz 1994; Taylor & Chatters, 1986; Thoits 1985). Emotional support includes expressions of liking, love, regard; respect, admiration etc. (Gulick 1994; Jayakody, Chatters & Taylor 1993; Olson & Shultz 1994; Taylor & Chatters, 1986; Thoits 1985) here...
instrumental support includes the use of relationships as a way to achieve a goal like providing labor, money or giving time to others but informational support refers to giving advice, suggestions, ideas to others. (DesRosier, Catanaro & Piller 1992; Jayakody, Chatters & Taylor 1993; Olson & Shultz 1994; House 1981; Taylor & Chatters, 1986; Thoits 1985).

It is assumed that social support has two important types of functions: the health sustaining function which has the direct effect on the well-being of the individuals. Social Support contributes to the positive adjustment and development of personality. On the other hand, social support also has an indirect stress-reducing or buffering function (Cobb 1976; Thoits 1982). Health Psychologists have extensively studied the association between social support, mental and physical health and found that it is extremely beneficial in highly stressful situations. Support is a powerful preventive and healing process. Social support means useful helping resources provided by others. Literature on social support suggests that it is very much important concern in our daily lives. Individuals with a serious and persistent mental illness are vulnerable to stress, but have fewer opportunities for social support due to smaller size of their social support networks.

The concept of social support has variously been defined by the researches as social bonds (Henderson, 1977), Social networks (Mueller, 1980), meaningful social contact (Cassel, 1976), availability of social confidents (Brown et.al., 1975), and human companionship (Lynch, 1977).

Kahn and associates (Kahn, 1979; Kahn & Antonucci, 1980) defined social support as the expression of liking, administration, respect, love, agreement and affirmation as well as the provision of direct aid and assistance. It is apparent that social
support is a multidimensional construct which not only represents that the person has social relationships but also indicates that he is esteemed and cared for. As a social activities or transactions he perceives that a support may come from many different sources the person’s spouse or lover, family, friends, co-workers, physicians or community organizations. Social Support is the kind of help that the person perceives from others i.e. emotional, personal, practical, informational and instrumental. The quality and the amount of support are more concerned with social support given by different sources.

**Types of Social Support**

There are basically three main sub types of social support: perceived social support, enacted social support, and social integration (Barrera, 1986). Perceived support (also known as functional support; Wills & Filer, 2001) is the subjective judgment of the person that family and friends would give him quality assistance with future stressors. People with high perceived-support believe that they can count on their family and friends to provide support in the time of need.

Researchers have shown that perceived social support helps in better management of diabetes, diabetics who have a better marital life report better quality of life (Trief, Himes, Orendorff & Weinstock 2001; Trief, Wade, Britton & Weinstock 2002). People with high perceived-support believe that they can rely on their family and friends to give them quality assistance during times of trouble. The assistance provided may be in the form of listening to the stressed person, expressing warmth and love, empathizing with the person, offering advice etc. Enacted support (also called received support) refers to specific supportive actions (e.g., advice or reassurance) offered by others during times of need. Social integration refers to the extent to which a recipient
is connected within a social network. Family relationships, friends, and membership in clubs and organizations contribute to social integration. But these three forms of social support are not strongly related to each other and each has different patterns of correlations with health, personality, and personal relationships (Barrera, 1986; Uchino, 2009). Perceived support generally refers to the psychological sense of support derived from feeling loved, valued, and part of a network of reliable and trusted special relationships (Gottlieb, 1985). It is more stable overtime because it is not context dependent.

There are three main types of causes of perceived support: recipient trait influences, provider influences, and relational influences (Lakey, 2010; Lakey, McCabe, Fisicaro & Drew, 1996). Recipient influences refer to differences among recipients in their perceptions of providers, averaged across providers. Provider influences refers to agreement among recipients that some providers are more supportive than other providers. Relational influences reflect systematic disagreement among recipients about the relative supportiveness of providers. Gender plays a role in perceived social support. Jackson (2006) conducted a cross-sectional study to examine the impact of perceived social support from close interpersonal relationships. Findings of their study suggested that high levels of social support from one’s close social network contribute to specific health practices for women but not for men. Neff et al. (2005) hypothesized that husbands and wives may differ in their responsiveness to their partners changing needs over time. They found that husbands and wives didn’t differ in the support they provided each other, but they differed in the timing of that support, the researchers elaborated that wives provide better support when their husbands experience greater stress. Husbands showed support as well as negativity when wives experienced greater stress. Gurung et al. (2003) found that men received emotional
support primarily from their spouses, but women depends more on their friends, relatives and children for emotional support. Kendler, Myers and Prescott (2005) who studied on 1,057 opposite sex dizygotic twin pairs stated that females tend to have larger social contacts as compared to males. They also emphasized that the females have higher social support because they seek emotional support in their relationships, while the males only receive social support from their spouses and colleagues.

According to Cumsille and Epstein (1994) females have been found to receive more perceived social support from their friends than their male counterparts, males receive more support from parents and other non familial adults than females do. From the above discussion it can be concluded that gender differences exist in the perception of social support between males and females.

**Theoretical Perspectives**

**Stress and Coping Perspective**

The most dominating theoretical perspective on social support assumes that support reduces the effects of stressful life events on health. This influential perspective draws from stress and coping theory (Lakey & Cohen, 2000). This theory highlights that stress occurs when people negatives interprets the situations and thus stress leads to health problems as people do not employ adequate coping strategies. Social support protects people from negative effects of stress thus, promoting health. Social integration, perceived support and enacted support plays somewhat different roles in the stress and coping model of social support. Enacted social support is assumed to influence appraisal and coping most directly. Yet, the receipt of enacted support requires at least a minimum of social integration and extensive social ties should provide many opportunities for enacted support (Uchino, 2004). An individual’s perception of support
should reflect his/her history of the receipt of effective enacted support, and this perception should directly reduce negative appraisals of stressors.

The stress-support matching hypothesis (Cohen & McKay, 1984; Cutrona & Russell, 1990) is that social support will be effective in promoting coping and reducing the effects of a stressor insofar as the form of assistance matches the demands of the stressor. This theory of stress and coping is very useful in determining the way people interpret situations or appraises them is very crucial in assessing whether the situation will be interpreted as stressful or not (Lazarus, 1966; Lazarus & Folkman, 1984). There are two types of appraisals primary and secondary. Primary appraisals involve judgments of whether the event is a threat. On the other hand secondary appraisals involve evaluations of personal and social resources available to cope with the event. Cohen and Hoberman (1983) and Wethington & Kessler (1986) hypothesized that the belief that support is available reduces the effects of stress by contributing to less negative appraisals.

The Social Constructionist Perspective

Social Constructions refer to the assumptions that people’s perceptions about the world do not reflect ultimate reality rather that people construct theories and concepts about the world that reflect their social context (Dewey, 1917/1997). This perspective suggests that there may be no common agreement between people or groups as to what constitutes supportive behaviours. Secondly, it predicts that the self and the social world are totally linked. According to Barone et al. (1997) one modern manifestation of social constructionism is social cognition and researchers have applied social cognition to understanding social support (Lakey & Cassady, 1990; Lakey & Drew, 1997; Mankowski & Wyer, 1997; Pierce, Baldwin, & Lydon, 1997; Sarason,
Pierce, & Sarason, 1990). This approach to social support draws from basic research in social cognition and from cognitive models of psychopathology (Lakey & Drew, 1997). Social –cognitive views of social support are concerned primarily with the perception of support. Compared to those who have low levels perceived support, people having high levels of perceived social support should interpret the same behaviours as more supportive, should have better memory for supportive behaviours, display greater attention to supportive behaviours and be able to think about support with greater ease and speed (Baldwin, 1992; Lakey & Cassady, 1990; Lakey & Drew, 1997; Mankowski & Wyer, 1997; Pierce et al., 1997). According to this view negative evaluations of the self, important other people and negative emotion are connected together in cognitive networks, which influence each other through spreading activation (Baldwin, 1992). Social –cognitive views of social support drive from cognitive models of emotional disorders (Beck et al., 1979), negative thoughts about relations are thought to overlap with and stimulate negative thoughts about the self, which in turn, overlap with and stimulate emotional distress (Baldwin & Holmes, 1987; Lakey & Cassady, 1990; Sarason, Pierce, & Sarason, 1990).

**Symbolic Interactionism**

According to Symbolic interactionism perspective, social environments directly improve and promote health and well-being by providing people with a way of creating sense of the self and the world. According to Stryker (1980) meaning and identity are derived, in part, from the roles we occupy and create within a social context. Role concepts that are prevalent in a group help in social interaction by giving a guideline as to how to behave with a different set of roles. Mead (1934) highlighted that people learn to regulate themselves by applying the standards of the group to their own conduct. This aspect of constructionist perspective provides a mechanism for
promoting behaviours that help in improving health and minimizing behaviours that might be harmful to their health.

**Theories of Social Support**

There are a variety of overlapping theories about how support affects behavior. Some of them are given below:

**Buffer Hypothesis**

One of the earliest theories was based on the concept that poor social ties reduce feedback and as a consequence one becomes confused, this confusion increases susceptibility to errors. According to this theory social supports protects the individual and acts as a buffer to environmental stresses.

**Direct Effect**

This theory assumes that practical and financial assistance from friends can alleviate or prevent some stressful life events. A sense of belonging and positive reinforcement can improve satisfaction with life. As a consequence, one might have fewer physical and mental disorders, in contrast to the buffer theory; this theory assumes that social support has an effect in the absence of stressful events.

**Personality Characteristics**

Individuals with a sense that they are well accepted by others are more likely to establish positive relationships and receive help. Similarly, those who feel that they are not accepted are less likely to feel that they have friends and may fail to get help even when help is available to them. Not only does the availability of help differ by the sense of acceptance but also positive sense of acceptance leads to better coping skills. Individuals reassured about their social support worry less about where help might
come from and spend more time facing problems. Because a sense of acceptance is a personality trait learned early in one’s childhood, this theory assumes that social support is a relatively enduring characteristic of the individual rather than a changing feature of the environment.

**Transactional**

The ecological model view social support as a feature of neither the individual nor the environment, but as a transaction between the two.

The person must maintain relationships by providing support to others when needed. In return, others will provide support when the individual is in need. Over time, the transactions of helping and being helped must balance, otherwise social ties change. Thus, in stressful situations sometimes relationships break and other times, strengthen, depending on whether the support has been reciprocated. The theory predicts that a person with good personal skills is more capable of helping others and therefore has more good will to rely on when he himself endures a series of stressful events. In the transactional model, social support limits the individual’s future behavior by requiring him to reciprocate

**Health Benefits of Social support**

Many studies have demonstrated that social support acts as a moderating factor in the development of psychological and physical disorders due to stressful life events, so it is an important component in the assessment of overall wellbeing. Researchers have found that social support benefits physical and mental health, in today’s world, social support helps to buffer the negative effects of day to day stressors. Williams and Ruth (2005) examined the role of social support in cognitive and emotional functioning in the lives of community dwelling older adults. They found that individuals with
higher levels of social support were found to have greater wellbeing scores, as they reported few symptoms of anxiety and depression, they further elaborated that social support effect perceived memory difficulties but not objective memory performance. Franks et al. (2006) found that mental health increased with spouses’ support of the patients attending a cardiac rehabilitation program but on the other hand spouses’ control predicted decreased patient health behaviour and mental health. Bertera et al. (2005) examined positive social support, social negativity, anxiety and mood disorders in a sample of 4688 adults aged 21-54 years from the national comorbidity survey (1990-1992). They found that number of anxiety and mood disorders episodes increased with increase in social negativity with spouse, relatives and friends. Positive support from spouses or friends was not found to be associated with a decreased episode of anxiety and mood disorders. Penninx et al. (1996) reviewed relevant literature and found that perceived social support was apparently is of greater importance than structural and functional support. Perceived social support positively affected the disease course favorably to have a beneficial influence on psychological adjustment, wellbeing, functional status and on more “objective” health outcomes. According to Taylor, Chatters and Jackson (1993) satisfaction with social support depends on the way in which it is perceived by the recipient. It has been found that perception of the availability of social support when a person experiences stress influences health outcomes. According to Sarason, Sarason, Hacher and Basham (1985) women who perceive greater availability of a person with whom they can share their problems adjust better to mastectomy than other women who lack such kind of support.

**Perceived Social Support and Diabetes**

Research documents that social network members can negatively or positively impact the efforts of a person with diabetes to manage the disease (Glasgow & Toobert,
Toljamo and Hentinen (2001) found that adherence to self-care regimens (i.e. insulin treatments, monitoring blood glucose, exercise, and self-care away from home etc.) was related to emotional and instrumental support from friends and family. This shows that the perceived availability and knowledge that friends and family as being present positively influences self-management efforts of individuals with diabetes. In addition to the positive and negative impact support can have on self-management efforts, it is also important to consider who an individual is receiving support from. Rhodes (1998) explains that it is important to consider the source of support that is available to an individual. Family and friends can both provide different natures of relationships. For example, both types of network members can provide companionship, information, and additional emotional help (Wellman (1985) as cited in Argyle, 1992), yet, it is important to note that help from a family member as compared to the help from a friend is likely to be associated with different health outcomes. This is because of the enduring ties associated with particular family members (i.e. a spouse). To study perceived social support and self-management efforts of adults with diabetes is important, as there has been a lack of attention concerning the impact of psychosocial factors on managing the disease. Most of the existing research on social
support and self-management of diabetes has focused on social networks, rather than perceived support.

As defined by Thoits (1992) social networks are “people’s ties to one another, in particular to the structure of those ties (e.g. the number of ties a person has, the frequency of his or her contact with network members, the role relationship of each member to the target respondent, etc.). (p. 57) According to Thoits (1992) impacts of perceived support and social networks are empirically distinct. Whereas perceived support is contingent on problems, social networks can be a source of problems as well as mobilized in the face of problems. Social networks can be sources of positive and negative influence. However, when the perceived support of a person with diabetes is measured, many times the focus is solely on positive aspects of the relationship. In the context of managing diabetes, both negative and positive aspects of social networks can impact management efforts.

Social support can have a direct effect or a buffering effect on health and supportive relationships are important factors which help to enhance emotional as well as physical health. According to the stress buffering hypothesis social support helps in lessening the effect or impact of stress on wellbeing when high levels of stress is experienced but does not effect well-being in the absence of stress (Snapp 1992; Thoits, 1985). In order to examine the effect of social support on the course of chronic diseases. Nicklett and Liang (2010) found that diabetic support is not significantly related with health decline, but diabetic support is related with adherence to health promoting behaviours consisting of a diabetic regimen. They further pointed out that adhering to a particular regimen component is associated to the illness support a patient receives for that particular regimen component; they concluded that illness-related
support appears to be a mechanism through which social support matters in the diabetic population.

**Perceived Social Support and Health Status (HRQOL)**

Cheung et al. (2006) conducted a study to see the quality of life in adolescents with type 1 diabetes i.e. which factors affect their quality of life. Adolescents diagnosed with diabetes are at risk for having a poor health-related quality of life. Research supports the positive relationship of social support and well-being in adolescents. This study compared the quality of life in adolescents with type 1 diabetes who have attended at least of those who never attended diabetes camp. Results provided evidence of the value of social support. Eriksson and Rosenqvist (1993) found that males who reported more perceived support had better fasting blood glucose values than females with comparable support. Further, males who reported high satisfaction with their perceived social support had better fasting blood glucose values than those with low satisfaction with support and women regardless of the actual level of perceived support they reported.

Schaefer, McCaul, and Glasgow (1986) examined supportive and non-supportive family behaviors and their relationship to adherence and metabolic control in 18 adolescents and 54 adults with type 1 diabetes. Social support from family was measured using a diabetes family behavior checklist (DFBC) that was developed for IDDM individuals to assess the frequency of supportive and non-supportive family behaviors that may influence adherence to treatment regimen. (Schaefer et al., 1986). Age and years diagnosed with diabetes information was also collected. Dependent variables of interest included adherence areas (e.g. prescribed insulin injections per day, number of prescribed glucose tests per day, diet adherence, and HbA1c level). In
relation to adult participants, the significant finding was that perceived negative family interactions were associated with poorer adherence to glucose testing, diet, and insulin injections.

Trief, Himes, Orendorff and Wynstock (2001) examined how marital relationship factors and quality of life among diabetic spouses, they conducted the study on 78 people with insulin dependent diabetes mellitus. Trief et al. (2001) found that better marital quality was associated with better adaptation to diabetes. Adaptation to diabetes was measured using a diabetes quality of life scale measuring satisfaction and impact of managing their diabetes. Trief et al. (2002) utilized the same sample from the first study and found that those with high marital adjustment at time 1 had higher perceived intimacy and were more satisfied with aspects of adaptation to their illness 2 years later. Marital quality was not significantly associated with glycemic control. The findings from both of these studies suggest that high marital quality results in better well-being.

Toljamo and Hentinen (2001) examined social support and adherence to self-care regimen among 213 insulin dependent diabetic adults in Finland. Demographic variables collected included age, living arrangements (i.e. if lived alone), and duration of diabetes, smoking rate, and co-morbidities. An instrument measuring self-management efforts was utilized and included areas such as insulin treatment, diet, exercise, self-monitoring of blood glucose, activity, and responsibility related to managing diabetes. HbA1c was used as a measure of metabolic control. Perceived social support from family and friends in emotional, instrumental, and informational aspects were included as well as informational support from professionals, peer support from others with diabetes, and financial support. Two additional items measured negative support from family and friends. Interestingly, in Toljamo and Hentinen (2001) research, after using logistic
regression analyses, Toljamo and Hentinen (2001) found no gender differences between age and HbA1c scores. Those who lived alone rather than with a family member had poorer HbA1c scores. In terms of age, those middle aged individuals who lived alone felt that they did not receive high support from family and friends compared to those participants who were under age 30 and lived with a spouse or friend. Older participants had higher perceived informational support. Men with lower education levels reported negative support compared to women. Relationships between social support and duration of disease, co-morbidities, smoking, and complications due to diabetes were not significant; those who felt they received peer support from other patients with diabetes had worse blood glucose levels. Also, those that adhered flexibly or strictly to their self-management regiment reported receiving more social support from their family and friends.

Quintana, Merino, Merino and Cea (2008) found that cultural predictors of metabolic control of diabetes included perception of blood glucose control, attribution of health benefits to a good control, family support and bonding quality with the health team.

Kyngas, Hentinen and Barlow (1998) collected data and interviewed 51 young diabetics on their compliance behaviour, the results showed that actions of nurses, physicians and parents described as motivating were related to better compliance, when parental actions were perceived as accepting good compliance was observed, also young diabetics whose friends extended silent support or for whom their friends were irrelevant were more likely to have good compliance. On the other hand negligent and routine actions of physicians, disciplined control by parents, and dominating friends were associated to poor compliance.

Aalto, Uutela and Aro (1997) conducted a cross-sectional study to investigate the relationship between health factors and psychosocial factors with health related
quality of life (HRQOL) in a 385 type 1 diabetic patient. They found that adequacy of social support was associated to all health related quality of life domains except pain and role functioning. The most important diabetes-related psychosocial factors were self-efficacy and diabetes-related social support.

Aalto, Uutela and Kangas (1996) conducted a survey to compare 953 diabetics with 2366 controls in terms of socioeconomic and occupational factors, leisure activity, family size, health habits, perceived social support and quality of life. Type 2 diabetics reported to have fewer healthy behaviour patterns than controls, type 1 diabetics determined their social support as inadequate slightly more than controls, but no significant differences in perceived social support availability were found between study groups. Type 1 as well as type 2 groups reported a lower health related quality of life. Goz, Karaoz, Goz, Ekiz and Cetin (2007) investigated the effect of diabetic patients’ perceived social support on their quality of life. They found that perceived social support and quality of life increased together. Quality of life and perceived social support were high for male patients’ and retired patients, perceived social support and quality of life increased with educational levels. Patients who were living also and using oral antidiabetic medications reported high quality of life and perceived social support scores. They concluded that social support increases quality of life.

Tillotson and Smith (1996) examined internal locus of control, social support, socio-economic status and other demographics as predictors of adherence to weight control in non-insulin dependent diabetes mellitus patients. The primary variables of interest included locus of control, perceived social support from the most concerned person in the individual’s life, and weight control adherence. The sample included 465 adults with non insulin dependent diabetes mellitus, who were predominantly female (72.7%) and African American (61.9%). Results revealed that locus of control and
social support significantly predicted weight control adherence. Tang, Brown, funnel and Anderson (2008) examined social support and its relationship to diabetes-specific quality of life and self-care behaviours in African–Americans with type 2 diabetes. They recruited 89 African-American adults aged 40 years and older diagnosed with type 2 diabetes. The researchers found that satisfaction with support was a predictor for improved diabetes–specific quality of life. Findings of the study indicated that social support plays a role in diabetes specific quality of life and self-management practice.

Pereira et al. (2008) studied the impact of family factors on diabetes, particularly the impact of family support and family environment on adherence to treatment, quality of life and metabolic control in Portuguese adolescents with type 1 diabetes. The researchers found that adherence was predicted by family support for females and lower class patients while metabolic control was predicted by family conflict for upper-class patients. They reported that quality of life was predicted by lack of family conflict and family social support for both the genders as well as lower class patients.

**Health Status (Health-Related Quality of Life)**

Health status is the impact of disease on patient function as reported by the patient. Health status can be defined as the range of manifestation of disease in a given patient which includes symptoms, functional limitation, and quality of life, in which quality of life is the discrepancy between actual and desired function (Rumsfeld, 2002). Furthermore as highlighted by Rumsfeld (2002) is that clinicians are more focused on the diagnosis of disease and evaluation of symptoms, whereas patients are focused on the complete range of their health status. In health care research, quality of life is usually measured as the patient's perceived health status focusing on his/her illness and
treatment experience. Hence, in health care research, it is referred to as Health-Related Quality of Life (HRQOL). Health-Related Quality of Life measures are classified into two major categories: the general health-related and disease-specific quality of life, examples of general Health-Related Quality of Life measures used in diabetes studies include the Medical Outcome Study Short Form 36-item Health Survey (MOS SF-36 or SF-36: Ware & Sherbourne, 1992), Nottingham Health Profile (NHP: Hunt, McKenna, McEwen, Williams, & Papp, 1981), Sickness Impact Profile (SIP: Bergner, Bobbitt, Carter, & Gilson, 1981), Duke Health Profile (DUKE: Parkerson, Broadhead, & Tse, 1991) and General Health Perceptions Questionnaire (GHP: Ware, 1976).

Terms like health status and health-related quality of life have used interchangeably in the past, this study also used Health status interchangeably with health-related quality of life. The term “health-related quality of life” or HRQOL emerged in the literature and focused on quality of life related to health status and healthcare (Barr, 1995; Shumaker & Naughton, 1995; Watkins & Connell, 2004). Health-related quality of life (HRQOL) has evolved to include aspects of life that affect perceived physical, emotional, and social aspects of health and well-being. When the goal of interventions is to improve patients’ well-being rather than to cure their underlying disease, perceived quality of life is seen as an essential outcome of clinical research. (Anonymous, 1995; Gill & Feinstein, 1994; Smith et al., 1999). It is important to understand the difference between overall quality of life and health related quality of life for data interpretation and conclusion purposes. Efforts to achieve excellent health can sometimes impair overall quality of life, particularly in the management of chronic illnesses (Bradley, 2001). According to Maciejewski (2006) health related quality of life consist of seven measurable domains: (1) physical functioning, (2) social
functioning, (3) emotional functioning, (4) cognitive functioning, (5) pain, (6) vitality, and (7) overall well-being.

Several researchers proposed conceptual models explaining the relationships among the components of health related quality of life (Bergner, 1985; Johnson & Wolinsky, 1993; Nagi, 1965; Patrick & Bergner, 1990; Read, Quinn, & Hoefer, 1987; Verbrugge, 1991; Wilson & Cleary, 1995). One of the most popular, among them was proposed by Wilson and Cleary (1995), integrates biological and psychological aspects of health status. It joints five levels of dimensions related to health related quality of life: (1) biological and physiological factors, (2) symptom status, (3) functional status, (4) general health perception, (5) overall quality of life.

Wilson and Cleary (1995) proposed a conceptual model for health related quality of life. The model includes a full range of variables that are included in health related quality of life assessments in addition to the integration of two different paradigms of health, one of which is held by clinicians and basic science researchers, and the other by social scientists. The models of these two academic traditions are different in terms of purpose, methods, and intellectual history, but it is useful to be able to compare them. In the clinical paradigm, or the “biomedical” model, the focus is on etiologic agents, pathological processes, and biological, physiological and clinical outcomes. The main focus of the social science paradigm, or the “quality-of-life” model, is on the targets on dimensions of functioning and individuals’ overall perceptions of well-being.

Wilson and Cleary (1995) fixed the gap between these two paradigms by defining the links between biological and other types of measures. The model is comprised of five primary levels of patient characteristics which include (1) biological-
physiological factors, (2) symptom status, (3) functional status, (4) general health perceptions and (5) overall quality of life. In addition, characteristics of the individual as well as the environmental factors are included in the model as nonspecific predictive variables of symptom status, functional status, general health perceptions and overall quality of life (Ferrans, Zerwic, Wilbur, & Larson, 2005; Wilson & Cleary, 1995).

Wilson and Cleary model guided the development of new understandings about the relationships among them (Fawcett, 1999) and which in turn helped health providers to recognize and measure appropriate patient outcomes that reflect quality patient care (Sousa & Kwok, 2006). While the model proposes a linear progression across the five concepts, Wilson and Cleary stated that the unidirectional arrows between concepts do not show that there are no reciprocal relationships and the unidirectional arrows between nonadjacent levels do not indicate the absence of reciprocal relationships between the levels. The arrows do, however, describe the proposed dominant causal associations between concepts (Wilson & Cleary, 1995). Wilson and Cleary also suggested that the components of the model exist on a continuum of increasing biological, social, and psychological complexity. At one end of the continuum are biological measures such as serum lipid levels and glycosylated hemoglobin, and at the other are more complex and integrated measures such as physical functioning and general health perceptions.

1) **Biological and Physiological Factors**: The first construct, biological and physiological factors, focuses on the function of cells, organs, and organ systems like the diagnosis-related laboratory values for type-2 diabetes such as HbA1c and physical examination findings such as a systolic and diastolic blood pressure. The health effects of characteristics that are mainly mediated by
changes in cell, organ, or organ system function are included at this level in the model (Wilson & Cleary, 1995).

2) **Symptom Status:** Wilson and Cleary (1995) defined symptom status as “a patient's perception of an abnormal physical, emotional, or cognitive state”, and classified symptoms into (1) physical symptoms, (2) psychological symptoms, and (3) symptoms that are not clearly physical or psychological in origin such as emotional distress, fear, worry, and frustration. According to Wilson & Cleary, (1995) the model propose that symptom status is affected by biological and physiological factors as well as individual and environment characteristics, although the effects of biological and physiological variables on symptom are uncertain.

3) **Functional Status:** In this model, functional status is characterized as the ability of the individual to carryout defined tasks and adjust to his/her environment and it can be measured either subjectively or objectively over a given time period (Lipkin, 1990; Wilson & Cleary, 1995). Personal and environmental factors which include perceived self-efficacy, family relationships and access to health care or medical treatment can have an effect on the individual’s functioning status.

4) **General Health Perceptions:** The general health perceptions, is a subjective self-rating of one’s overall general health. According to the model, proposed by Wilson and Cleary (1995) general health perceptions are directly related to functional status and indirectly related to symptom status and biological and physiological factors. General health perceptions are often measured by a single question that asks people to rate their health on a scale ranging from poor to
excellent although it can also be measured by a battery of items (Ferrans et al., 2005; Ware & Sherbourne, 1992).

5) **Overall Quality of Life:** The final concept in the Wilson and Cleary (1995) model is overall quality of life. Overall quality of life means how happy or content an individual is with his/her life as a whole. Overall quality of life should be related to HRQoL, but is also determined by other salient life circumstance and experiences (Wilson & Cleary, 1995).

6) **Characteristics of the Individual and Environment:** Characteristics of the individual like patient preferences and values as well as of the environment like social, economic, and psychological support are recognized as contributing to symptom status, functional status, general health perceptions and overall quality of life (Ferrans et al., 2005; Wilson & Cleary, 1995). Ferrans and colleagues (2005) revised the Wilson and Cleary Model to include pathways between (1) characteristics of the individual and (2) characteristics of the environment and biological and physiological factors. Individual characteristics such as genetic make-up are known to influence biological functions such as vulnerability to disease and response to treatments. Environmental characteristics can also influence susceptibility to disease or disease severity.

**Health Status (Health Related Quality of Life) and Diabetes**

Researches in past have found the negative effects of diabetes on Health Status (health-related quality of life). The illness, its complications and treatments, and patient attitudes all act to adversely affect multiple dimensions of health related quality of life, including physical, role, social, cognitive, and sexual functioning, emotional well-being, pain, and health perceptions. One of the ultimate goals in the treatment for
patients with diabetes is to enhance their health related quality of life, which may in turn also improve their disease status (Jacobson, de Groot, & Samson, 1995). Mokdad et al. (2000) pointed that large societal burden of type 2 diabetes; its impact on health related quality of life is a public health issue which is of concern to patients, their families, employers, health care providers, and payers.

In the published studies on the impact of diabetes mellitus on health related quality of life (Eiser & Tooke, 1995; Hornquist et al., 1995; Polonsky, 2002; Norris, 2005; Rubin & Peyrot, 1999; Rodin, 1990; Wandell, 2005), subjects with Diabetes have low health related quality of life than subjects without chronic illness, but they have better health related quality of life than subjects with most other serious chronic illnesses (Rubin & Peyrot, 1999). Health related quality of life in subjects with diabetes mellitus may be associated with the number and types of other co-existing medical conditions (Maddigan et al., 2005; Luscombe, 2000). As de Visser et al. (2002) pointed out that compared to diabetes mellitus patients without cardiovascular disease; diabetes mellitus patients with co-existing cardiovascular disease had a lower quality of life. Diabetic patients with microvascular complications were likely to have worse health related quality of life than diabetes patients with macrovascular complications (Holmes et al., 2000). Severity of complications and number of complications impair health related quality of life (Ahroni et al., 1994, Anderson et al., 1997, Bardsley et al., 1993, Glasgow et al., 1997, Goddijn et al., 1996, Polonsky 1995 & UKPDS 1999). Compared to number and severity of the complications duration of disease may not be an important factor. Duration was found to be related to low HRQOL especially the physical functioning (HänninenTakala, Keinanen-Kiukaanniemi 1998; Keinänen-Kiukaanniemi, Ohinmaa, Pajunpaa & Koivukangas, 1996). But Wredling et al. (1995) found no association between duration of the disease and scores of Well-Being questionnaire or Diabetes Treatment Satisfaction questionnaire (DTSQ)
scores. Boyer and Earp (1997) found that duration of the disease did not influence scores of the Diabetes 39 instrument in cross-sectional validation studies. Health related quality of life in Diabetes patients may also be negatively associated with severity of the disease, with diabetes mellitus patients on insulin having worse health related quality of life than those on oral medications or diet (Maddigan et al., 2003). Other factors which are known to be negatively associated with health related quality of life in diabetes mellitus patients include glycemic control, types of treatment and demographic variables (Luscombe, 2000). Diabetes mellitus has detrimental effects on a range of health outcomes including health related quality of life (Harris, 2000; Reddy, 2000; Hornquist et al., 1995). The Medical Outcomes Study found that Diabetes Mellitus impaired all dimensions of health except mental health and pain (Stewart et al., 1989). Alonso et al. (2004) found that diabetes mellitus have a significant impact on general health, measured using the Medical Outcomes Short-Form 36 (SF-36). According to Sprangers et al. (2000) the amount of impact of diabetes mellitus on health related quality of life was reported to be equal to that of having cardiovascular conditions, cancer and chronic respiratory disease. Diabetes mellitus subjects with multiple chronic medical conditions have poorer health related quality of life than those without these conditions (de Visser, 2002; Lloyd et al., 2001). As de Visser, (2002) reported that Diabetes mellitus patients with cardiovascular diseases had significantly lower scores on RAND-36 social functioning, vitality and health-change scales. On the other hand diabetes mellitus patients with coronary artery disease, peripheral sensory neuropathy and peripheral vascular diseases reported significantly lower scores on several SF-36 scales (Lloyd et al., 2001).

Graham et al. (2007) conducted a cross-sectional study to assess the differences in health related quality of life between older Mexican Americans with and without
diabetes. They found that diabetes was associated with lower health related quality of life in older Mexican Americans. The results indicated that physical component of health related quality of life uniformly differentiated those with diabetes from non-diabetics. Redekop et al. (2002) studied the health-related quality of life and treatment satisfaction for patients with type 2 diabetes in Netherlands, the researchers examined which patient characteristics are associated with quality of life and treatment satisfaction. The results showed that patients without complications of diabetes had health related quality of life only slightly lower than age matched controls in the general population. Insulin therapy, obesity and complications were associated with a lower health related quality of life, independent of age and sex. Higher fasting blood glucose and HbA1C levels were negatively associated with health related quality of life but not significant. Overall treatment satisfaction was very high. Coffey et al. (2002) described the health utilities associated with diabetes and its treatment complications and co morbidities, they studied 2,048 subjects with type 1 and type 2 diabetes recruited from speciality clinic at a university medical center.

The researchers found that blindness, dialysis, symptomatic neuropathy, foot ulcers, amputation, debilitating stroke, and congestive heart failure were associated with lower utility scores. The researchers concluded that major diabetes complications are associated with worst health related quality of life. Aalto, Uutela, and Aroc (1997) measured health related quality of life among insulin-dependent diabetics, they examined the associations of health factors and psychosocial factors with health related quality of life in a sample of adult type 1 diabetic patients. Psychosocial measures were general social support, diabetes specific social support, diabetes locus of control, self-efficacy, diabetes health beliefs and self-care practices. The researchers found that limitations in physical functioning showed strong associations with perceived health,
role functioning, social functioning and pain and was moderately associated to mental health. Duration of diabetes and glycemic control were not related to health related quality of life dimensions but adequacy of social support was related to all health related quality of life domains apart from pain and role functioning. Self efficacy and diabetes related social support emerged as the most important diabetes related psychosocial factors. Luyster and Jacob (2011) examined the relationship between sleep quality and health related and diabetes related quality of life in adults with type 2 diabetes. The researchers found that poor sleep quality was a significant predictor of lower health related quality of life, poor sleep quality was also associated with worse diabetes related quality of life. Poor sleep is common in type 2 diabetes and may adversely affect quality of life of type 2 diabetes.

Mier et al. (2008) examined physical and mental health domains of health related quality of life in a binational adult population with type 2 diabetes at the Texas-Mexico border and to explore individual and social correlates to physical and mental health status. Adults 18 years and older with type 2 diabetes living in the South Texas Lower Rio Grande Valley and in Reynosa, Tamaulipas Mexico were recruited using convenience sampling technique. There were no significant differences between valley and Reynosa respondents in physical or mental health status. Wexler et al. (2006) assessed the impact of medical co morbidities, depression and treatment intensity on quality of life in a large primary care cohort of patients with type 2 diabetes. They found that older age, female sex, low socio-economic status, cardiovascular disease, microvascular complications, congestive heart failure, peripheral vascular disease, chronic lung disease, depression, insulin use and number of medications correlated with decreased quality of life. Microvascular complications, heart failure and depression
were most strongly related to decreased health related quality of life, independently of duration of diabetes.

Sara et al. (2007) examined the effect of diabetes disease burden and social resources on health related quality of life among older rural adults with diabetes. The researchers analyzed data from a population based cross sectional survey of 701 adults with diabetes in North Carolina from three ethnic groups: African Americans, Native American and White. Higher physical health related quality of life was associated with male sex, greater mobility ability, fewer chronic conditions, exercising Vs not exercising, fewer depressive symptoms and not receiving process assistance. Higher mental health related quality of life was associated with greater mobility ability, fewer chronic conditions, and a high school education or more. Physical health related quality of life was affected by diabetes and ethnic differences in health related quality of life are largely accounted for diabetes disease burden and to a lesser extent to social resources.

Briggs et al. (2002) examined the associations of socioeconomic barriers, familial barriers and clinical variables with health related quality of life. They conducted a cross sectional study of 186 African Americans with type 2 diabetes recruited from two primary care clinics. The researchers found no significant differences in SF36 scale scores based on gender, age, income or insurance status. Clinical variables significantly associated with reduced health related quality of life were obesity, impaired renal function, and insulin use and co morbid disease. Blood pressure, lipids, and HbA1C were not significantly associated with health related quality of life in their study. Papadopoulos et al. (2007) assessed the health related quality of life of Greek type 2 diabetes mellitus patients and identified significant predictors of the disease in the patient population. The sample consisted of 229 type 2
diabetes mellitus patients in a rural community of Lesvos, an island in the north east of the Aegean Archipelagos. The results showed that the most important predictors of impaired health related quality of life were female gender, diabetic complications, non-diabetic co morbidity and years with diabetes, older age, lower education, being unmarried, obesity, hypertension and hyperlipidaemia were also related to impaired health related quality of life in at least one SF 36 subscales.

Woodcock and colleagues (2001) found that older age and co-existing health problems influenced patients’ perceived health status and quality of life more than diabetes. Diabetes due to its major complications and chronic nature affects the health related quality of life of the patients. According to Sridhar and Madhu (2001) and Rubin and Peyrot (1999) quality of life in type 2 diabetes mellitus in an important health outcome measure. United Kingdom Prospective Diabetes Study (1999) found that complications of the disease had an affect on quality of life, but the treatment measure (intensive versus aggressive) did not affect quality of life. Vileikyte (2001) found that involvement of the foot had a negative impact on the quality of life. Behbow, Wallymahmed and MacFarlane (1998) found that impaired quality of life was related to symptomatic diabetic neuropathy. Solli, Stavem and Kristiansen (2010) explained that episodes of hypoglycaemia, fear of hypoglycaemia, change in lifestyle and fear of long term consequences also contributed to reduced health related quality of life and they further highlighted that diabetic patients have reduced health related quality of life as compared with those without diabetes in the same age group, type 2 diabetes and those at high risk for future diagnosis of diabetes report decreased overall health related quality of life and more difficulty with mobility, self-care, and usual activities compared with those at lower risk. (Grandy & Fox 2008; Holmes et al., 2000)
and that health related quality of life declines with progression of the disease and complications (Koopmanschap 2002; Wexler et al., 2006).

Researchers have shown that people with diabetes have low health related quality of life as compared to people who don’t have diabetes, treatment regimen especially insulin treatment, age and duration of diabetes reduce health related quality of life or make no difference, better metabolic control leads to better health related quality of life, men report better health related quality of life than women and people from higher educational level or better social status report better quality of life (Glasgow et al. 1997; Peyrot & Rubin 1997). Orfila and colleagues (2006) examined gender differences in general health-related quality of life among older adults. They found that women showed worse health related quality of life than men which they attributed to a higher prevalence of disability and chronic conditions. They also suggested that older women are considerably more likely than men to experience functional impairments in mobility and personal self-care, which may contribute to their lower health related quality of life (Orfila et al., 2006).

Jacobson and colleagues (1995) found that the SF-36 was more sensitive to changes in the number and severity of diabetes complications than the Diabetes Quality Of Life questionnaire. An increase in the number and severity of diabetes complications was associated with significantly worse quality of life, as measured by the SF-36 (all subscales) and DQOL (satisfaction, impact and total scores) among subjects with type-1 diabetes. Among those with type-2 diabetes, the number of complications was a weak predictor of quality of life. It had significant negative associations only with SF-36 Role-Physical and DQOL Satisfaction subscale scores. However, the investigators noted that subjects with type-2 had fewer complications.
(only one had three complications) than subjects with type-1 diabetes (Jacobson et al., 1994).