ABSTRACT

This study examined “Health Locus of Control, Resilience and Perceived Social Support as determinants of Health Status among diabetics”. In chronic diseases health status (health related quality of life) is a major concern. Diabetes mellitus is a chronic disease which has a great impact on health status (HRQoL) of the patients; it is an important cause of death, illness and disability across the world. Diabetes greatly increases the risk of developing blindness, lower limbs amputations, end-stage renal disease, coronary artery disease, cerebrovascular disease or peripheral vascular disease thus in other words diabetes mellitus affects the health status (health related quality of life) of diabetic patients. Diabetes Mellitus one of the most prevalent chronic diseases is a condition in which a person has a high blood sugar (glucose) level as a result of the body either not producing enough insulin or because body cells do not properly respond to insulin that is produced. In other words diabetes is a condition where the body is unable to regulate blood glucose levels, resulting in too much glucose in the blood, the body cells do not absorb the glucose, the glucose accumulate in the blood (hyperglycemia), leading to various potential medical complications. Many psychosocial variables are known to effect health status of diabetic patients such as health locus of control, resilience and perceived social support. Health Locus of control is one such psychosocial factor which is found by various researches to affect diabetes management. The concept of locus of control 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 and Wallston, de Vellis 1978). 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 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 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. 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. 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).

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 and Kobasa, 1984; Wallston et al., 1983; Willis, 1984). 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. 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. 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.

Health status is the impact of disease on patient function as reported by the patient. More specifically, health status can be defined as the range of manifestation of disease in a given patient including 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 traditionally focused on the diagnosis of disease and evaluation of symptoms, whereas patients are focused on the complete range of 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).

The following main research objectives were systematically designed:

1) To examine whether health locus of control, resilience, and perceived social support will differentially predict health status among diabetic patients.

2) To examine whether health locus of control, resilience, and perceived social support will differentially predict health status among controlled diabetic patients.

3) To examine whether health locus of control, resilience, and perceived social support will differentially predict health status among uncontrolled diabetic patients.

4) To examine whether diabetic males differ from diabetic females with respect to health locus of control, resilience, perceived social support and health status.

5) To examine whether educated diabetic patients differ from uneducated diabetic patients with respect to health locus of control, resilience, perceived social support and health status.

6) To examine whether insulin dependent diabetic patients differ from tablet taking diabetic patients with respect to health locus of control, resilience, perceived social support and health status.

7) To examine whether diabetic patients with complications differ from diabetic patients without complications with respect to health locus of control, resilience, perceived social support and health status.
The sample of the present study comprised of 200 type 2 diabetic patients. They were selected from the Out Patient Department (OPD) of Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, through convenient sampling method. The sample consisted of 82 male type 2 diabetic patients, and 112 female type 2 diabetic patients. The mean age of the patients was 52.85 years. Sample was divided between two groups on the basis of hbA1C levels.

In the present study, four scales were used, namely, Health Locus of Control Scale, Resilience Scale, Perceived Social Support Scale and Short Form 36 (SF-36) measure health status.

**Development of Health Locus of Control Scale**

The Multidimensional (MHLC) scale developed by K.A Wallston et. al., 1978 consists of 18 items. The scale is composed of three-6 items subscales reflecting the degree to which individuals attribute health outcomes to internal control (6 items), and chance (6 items). Each sub-scale measures an individual’s tendency to believe that health outcomes are due mainly to one’s own behaviour (IHLC), Powerful others such as medical professionals or family (PHLC), or to and chance (CHLC). PHLC and/or CHLC are classified as “external” belief, and IHLC as “internal “belief (Wallston and Wallston 1978). Responses on items are taken on a 6-point rating scale ranging from strongly disagree (1) to strongly agree (6). They have Cronbach alphas in the .60-.75 range and test-retest stability coefficients ranging from .60-.70.

All the items of MHLC subscales were arranged in a random order. Higher subscale scores indicated greater locus of control along that dimension. The internal consistency of the scale ranged between (0.67 to 0.77). In a comparative study of
Wallston’s Multidimensional scale of HLC and Lau-Ware Scale of HLC, Marshall et.al. (1990) demonstrated the psychometric superiority of the Wallston instrument over the other. Its factor analysis supported categorization of the Wallston items into the proposed dimensions. Its scores are added separately for its three dimensions i.e., Internal control, Powerful others and Chance.

**Resilience Scale**

To measure resilience, the Resilience scale developed by Waglind and Young (1993) was used. The scale is a 25 item scale of Likert type with possible score range from 25 to 175 the higher the score, the stronger resilience. This scale measures the degree of individual resilience, which is considered a positive personality characteristic that enhances individual adaptation.

Waglind and Young on the basis of literature on resilience arrived at five components as the basis for developing their instrument. Following are the five components.

1. Equanimity is a balanced perspective of one’s life and experiences.
2. Perseverance is persistence despite adversity or discouragement
3. Self-Reliance is a belief in oneself and one’s capabilities
4. Meaningfulness is the realization that life has purpose
5. Existential Aloneness is the realization that each person’s life path is unique.

All the items were scored on a 7-point Likert scale (1= strongly disagree to 7= strongly agree), with a possible scores of 25 to 175. Waglind and Young (1993) reported internal consistency reliabilities for the instrument ranging from .76 to .91 from several of their previous studies. Test –re test reliabilities range from .67 to .84. Correlations from other instruments included measures of morale (.54, .43, and .28),
Life satisfaction (.59 and .30), Perceived stress (-.67 and -.32), Symptoms of stress (-.24), depression (-.36) and self esteem (.57).

**Perceived Social Support Scale**

Perceived social support was measured by a scale developed by Zimet et al (1998). The scale is seven point Likert- type scale, ranging from very strongly disagree (1) to very strongly agree (7). It consists of 12 items to measure the perceived adequacy of support from the following three sources: Family (items 3, 4 8 and 11), Friends (items 6, 7, 9 and 12) and Significant others (items 1, 2, 5 and 10).

Zimet et al (1988) in the original study administered the MSPSS and the Hopkins Symptom Checklist (HSCL; Derogatis, Lipman, Rickels, Unlenhuth, & Covi, 1974) to 275 male and female Duke University undergraduates. In this initial study, a principal components factor analysis confirmed the subscale structure proposed. In addition, coefficient alpha values ranged from .81 to .90 for the family subscale, from .90 to .94 for the friends subscale, from .83 to .98 for the significant other subscale and from .85 to .91 for the scale as a whole, indicating good internal reliability. Similarly, test –retest values ranged from .72 to .85 , indicating good stability. Adequate construct validity was demonstrated in significant correlations between the MSPSS subscales and the Depression and Anxiety subscales of the HSCL. In analyzing gender differences, it was found that women reported receiving significantly greater support than men from friends, from a significant other, and overall.

**SF 36v2**

The SF-36 is one of the most widely used general HRQoL measures and it is sometimes called “Gold Standard” in measuring health status across the World and is considered to be the most relevant to the diabetes population (Bradley, 1996; Garratt et
al., 2002; McColl et al., 1995). The survey has been used in various populations, including type-2 diabetics (De Berardis et al., 2005; Paschalides et al., 2004; Trief et al., 2003; Woodcock et al., 2001). Based on the SF-36, the SF-36v2 health survey (SF 36v2; Ware, 2000, 2004; Ware et al., 2007) offers significant improvements in the measurement of HRQOL. The MOS SF-36 v.2 has established content, criterion and construct validity. The latter was assessed using the Quality of Well-Being Scale, Sickness Impact Profile, and Katz Activities of Daily Living scale, Duke Health Profile, Nottingham Health Profile, Functional Status Questionnaire, Modified Health Assessment Questionnaire, and the Shortened Arthritis Impact Measurement Scales (McHorney et al., 1993)

This questionnaire has eight domains, viz Physical Functioning (PF), Role Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role Emotional (RE), and Mental Health (MH). The ‘physical functioning’ domain measures performance of physical activities such as running, lifting and carrying groceries, climbing stairs, walking etc. Low scores indicate significant limitations in performing physical activities while high scores reflect little or no such limitations. Role-Physical includes measures for example, of limitation or time reductions in capacity for work or other activities and the kind of work which can be undertaken. High scores indicate little or no problems with work or other daily activities stemming from physical problems. ‘Bodily pain’ covers the intensity of pain, and the extent to which pain interferes with normal activities. Low scores indicate high levels of pain that impact normal activities, whereas high score indicates no pain and no related impact on normal activities. ‘General Health’ relates to respondents’ view and expectations on their health. High scores represents better general health. ‘Vitality’ relates to energy level and fatigue, and addresses subjective well-being. Low scores
indicates feelings of tiredness and being worn-out, high scores indicate feeling full of energy all or most of the time. ‘Social Functioning’ addresses health related impacts on the quantity and quality of social activity. The high scores indicate that the individual performs normal social activities without interference from physical or emotional problems. ‘Role-Emotional’ assesses the effect of mental health on time spent at work or other activities, and the amount and degree of care devoted to work or the performance of other activities. Low scores on this scale reflect problems with work or other activities as a result of emotional problems. High score reflect no such limitations due to emotional problems. ‘Mental Health’ covers depression, anxiety, loss of behavioral/emotional control and psychological well-being. Low scores on mental health are indicative of frequent feelings of nervousness and depression, whereas high scores indicate feelings of peace, happiness, and calm. Self-Evaluated Transition item was not used in the scoring. Ten items were reverse scored. Few items needed Recalibration for this purpose Quality Metric Scoring Software version 3 was used. Scoring was done using Quality Metric Scoring Software version 3. Domains were scored from 0-100. Higher score represents better health status.

The PDS includes the information under the following major headings: Name of the patient, age, gender, marital status, HbA1C, education, mode of treatment, and diabetes complications.

Permission to conduct the research was taken from the concerned Hospital authority and participants. The data were collected by the researcher. Personal data sheet (PDS) and four questionnaires namely Health Locus of Control scale, Resilience Scale, Perceived Social Support and SF36v2, were administered on the patients. Each respondent took almost 25-30 minutes in answering all the questions. They were
assured that their responses would be kept strictly confidential and would be used exclusively for research purpose.

For determining the effect of health locus of control, resilience and perceived social support on health status, multiple regression analysis (step-wise), and independent samples t-test were used to compare the differences of demographic variables. The analysis has been done by using Statistical Package for Social Sciences (SPSS) version 16.

The major findings of the present study are as follows:

- Educated diabetic patients have higher mean scores than uneducated diabetic patients on resilience. Educated diabetic patients scored higher on internal health locus of control and uneducated diabetic patients scored higher on chance health locus of control. On dimensions of perceived health locus of control no difference was found on family and significant others’ support but educated diabetic patients scored higher on friends’ dimension of perceived social support than uneducated diabetic patients. On health status educated diabetic patients scored higher on all the dimensions except role-physical.

- Tablet takers diabetic patients scored higher on resilience as compared to insulin takers, no difference was found on dimensions of health locus of control and dimensions of perceived social support between insulin dependent and tablet takers diabetic patients. Significant difference was found on physical functioning, role-physical, general health and mental health dimensions of health status with tablet takers diabetics scoring higher than insulin dependent.
• Diabetic patients without complications scored higher than patients with complications of diabetes on resilience, internal health locus of control, support from significant others’ and on eight dimensions of health status.

• Male diabetic patients scored higher than female diabetic patients on resilience. Males scored higher on internal health locus of control whereas females scored higher on chance health locus of control. No difference was found between male and female diabetic patients on dimensions of perceived social support. Whereas on all the dimensions of health status males scored significantly higher than females diabetic patients.

• Resilience turned out to be the main predictor of all the dimensions of health status in the as a whole group as well as controlled and uncontrolled group of diabetic patients.

• In as a whole group for physical functioning resilience turned out to be the most important predictor followed by internal health locus of control and friends’ support. For role-physical resilience again turned out to be the strongest predictor followed by powerful others’ health locus of control and chance health locus of control both negative relationships with role-physical. Resilience and internal health locus of control predicated bodily-pain. Again resilience and internal health locus of control turned out to be the predictors for general health. Step-wise multiple regression showed that resilience predicted vitality followed by chance health locus of control with the latter having a negative relationship with vitality. Social functioning was predicted by resilience followed by family support and friends’ support with latter having a negative relationship with social functioning. For role-emotional resilience turned out to be the most important predictor
followed by chance health locus of control with latter having a negative relationship with role-emotional. For mental health dimension of health status resilience again turned out to be the strongest predictor followed by chance health locus of control and internal health locus of control with chance health locus of control having negative relationship with mental health.

- In the controlled group of diabetic patients physical functioning was predicted by resilience and internal health locus of control. Resilience turned out to be the predictor of role-physical, step-wise multiple regression analysis showed that resilience again turned out to be the strongest predictor of bodily-pain followed by internal health locus of control, again resilience and internal health locus of control turned out to be the strongest predictors for general health. Resilience and internal health locus of control again predicted vitality among controlled diabetic patients. Resilience again followed by family support turned out to be the strongest predictors for social functioning. Resilience had a very strong relationship with role-emotional and mental health among controlled diabetic patients as it came out to be the predictor for role-emotional and social functioning.

- Among uncontrolled group of diabetic patients resilience again turned out to be the strongest predictor for physical functioning followed by friends’ support latter having a negative relationship with the physical functioning. Resilience and friends’ support again predicted role-physical. Resilience and internal health locus of control have very strong relationship with bodily pain as they turned out to be the strongest predictors for bodily-pain dimension of health status. For general health resilience and friends’ support turned out to be the strongest predictors. Resilience and chance health locus of control predicted vitality among
uncontrolled diabetic patients. Resilience again turned out to be the strongest predictor of social functioning in uncontrolled diabetic patients followed by chance health locus of control. For role-emotional resilience, followed by chance health locus of control, significant others’ support and family turned out to be the strongest predictors. Among uncontrolled diabetic patients resilience again along with chance health locus of control predicted mental health.