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# Cognitive Emotion Regulation and Sleep Problems among Patients of Insulin Dependent Diabetes Mellitus

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ABSTRACT

The purpose of the present study was to assess the effect of insulin dependent diabetes mellitus on cognitive emotion regulation and sleep problems. So in this research first hypothesis is Cognitive emotional impairment is positively correlates with sleep problems in patients of insulin-dependent diabetes mellitus and it is supported by the following researches (Fairholme, et al., 2013; Jaser, & Ellis, 2015; Inkster, et al., 2016). Second hypothesis is Patients of insulin-dependent diabetes mellitus would show greater impairment on Cognitive emotion regulation & Pittsburg sleep quality index as compare to healthy participants and it is supported by multiple researches which also showed similar findings e.g. (Surani, et al., 2015; Hung,et al., 2013; Kodakandla, Meddela, & Pasha, 2016). Another hypothesis of the present study is Patients of diabetes mellitus would show greater impairment on self-blame, other blame, rumination & catastrophizing as compared positive refocusing, positive reappraisal, acceptance & planning and it is supported by different epidemiological researches e.g. (Kraaij, & Gernafski, 2012; (Honglan, 2016; Jacobsen et al., 2004). The sample comprised of 96 participants (48 males, 48 females). So conclusions of the study were that Cognitive emotion regulation is positively correlated with sleep problems in patients of insulin-dependent diabetes mellitus. The study also indicate that patients of diabetes mellitus showing greater impairment on self-blame, other blame, rumination & catastrophizing as compared positive refocusing, positive reappraisal, acceptance & planning. Consequently, a clinical implication of this study is that the forecast of having higher levels of cognitive emotion regulation and sleep problems for the duration of a stressful persistent diabetic treatment may possibly give therapeutic goals as well as

medication for organization not only on the whole reaction to cure but too the flow of cognitive and emotional proceedings that eventually persuade the patient's cure experience.Further research implications of the present study are that the impact of diabetes on emotions and sleep related problems, the level of both variables change according to patient's response. Findings of the present study give more help to those students who have new research on cognitive emotion regulation and sleep problems among diabetic patients. Furthermore students can include these results in their own study in different ways as a literature or as a discussions part.The study would be helpful for the health professionals to design the strategies required to deal with the emotional and sleep problems of the diabetic patients.
**Keywords**: Diabetes Mellitus, Cognitive Emotion Regulation, Sleep Problems, Insulin-Dependent Diabetes, Emotional Impairment

## INTRODUCTION

Diabetes mellitus (DM) is one of the most harmful disease in which pancreas does not produce or create enough insulin as needed or required by the body (World Health Organization, 2010). As indicated by National Diabetes Data survey, two primary types of diabetes. Type 1 and Type 2 diabetes. Type 1 diabetes is also called insulin dependent diabetes (IDDM) and type 2 diabetes is also called non insulin dependent diabetes (NIDM). In type 1 diabetes pancreas does not create insulin but in type 2 diabetes pancreas usually create some insulin (Drum, & Zierenberg, 2005).

According to International Diabetes Federation, 2010 type 1 diabetes does not produce enough amount of insulin so this type is more severe than type 2. In type 1 diabetes individuals mostly dependent on insulin as compared to type 2 diabetes. Type 1 diabetes is most threatening for one's life as you know pancreas does not produce insulin and person can die. It is mostly in young people and it comes at any stage of life (Vinicor, 2004).

Young people with type 1 diabetes experience lots of physical, psychological and emotional problems in everyday life task and it is very difficult for them to handle and cope with these difficulties (Erdal et al., 2015). Cognitive emotion regulation refers to the processes of attention and thinking which aim to alter the look, valence, amount and timing of emotional responses (Garnefski et al., 2001).

Individual with type 1diabetes can also experience cognitive distortion like memory, attention as well as executive functioning (Pourabasi et al., 2016). Cognitive function like both attention and memory are equally impaired during the deficiency of glucose in blood. Cognitive functions are very important to the person's ever day life task. When individual's cognitions impaired they cannot complete their task properly. Impaired blood glucose can affect mood and emotions. Individuals always feel tension and lack of motivation to overcome his/her tension and this condition leads to aggression. In type 1 diabetes people mostly engaged in depression and social anxiety (Inkster & Frier, 2012)

Studies investigate that diabetes and high level of blood glucose level can affect emotions, and these emotions also can affect patients who suffer with diabetes

often lead to worse depression. High blood glucose level can affect person's ability to concentrate and can make individuals to feel irritable. High blood sugar can also affect Cognitive functions (Solowiejczyk, 2012).

A study shown that young people with type 1 diabetes having more emotional problems like depression and these depressive symptoms were associated with different health related complications in which poor glycemic control level and increased hospitalization is included (Kraaij & Garnefski, 2015. A qualitative study exposed that three subjects that are strongly linked to diabetes related distress in which pressure of behavior, high level of emotional occurrence and danger of diabetes complications (Tol et al., 2012).

A well-mannered night's sleep is one of life's most satisfying encounters, while agitation is unpleasant (Saper et al., 2005).Sleep is a precondition for healthy performance of individual's mind and body. Sleep is generally based on circadian rhythm that follows a time of wakefulness. Poor and impaired sleep is associated with lots of problems and diseases. Poor sleep has also associated with individual's poor performance and occupational accidents (Surani et al., 2015).

Sleep quality and quantity is considerably expecting a danger issue of diabetes. People who experience diabetes may increase risk of maintaining sleep they may face difficulty in sleep (Cappuccio et al., 2009). The quality and quantity of sleep is influenced by different factors like social, cultural, psychological environmental and genetic factors. A recent study demonstrates that lack of sleep or shortage of sleep is strongly associated with glucose intolerance and increase risk of diabetes. Impaired sleep is a risk factor for cardiovascular disease (Cho et al., 2014).

## Statement of the problem

The present research aims to identify the effect of cognitive emotion regulation and sleep problems among patients of insulin dependent diabetes. How emotions affect diabetic patients. Explore the relationship between sleep problems and diabetes mellitus so the problem of statement become

"The current study examined that how cognitive emotion regulation and sleep problem can affect the life style of patients of insulin dependent diabetes mellitus". The purpose of the present study was to assess the effect of insulin dependent diabetes mellitus on cognitive emotion regulation and sleep problems. There are lots of epidemiological studies in which diabetes and cognitive emotional problems are discussed. Studies investigate that diabetes and high level of blood glucose level can affect emotions, and these emotions also can affect patients who suffer with diabetes often lead to worse depression. High blood glucose level can affect person's ability to concentrate and can make individuals to feel irritable. High blood sugar can also affect Cognitive functions (Solowiejczyk, 2012). Other researchers discussed about sleep problems in diabetic patients. An epidemiological study investigate that there is a strong association between the short duration of sleep and increase risk of diabetes and obesity. This study present that chronic sleep loss leads to sever metabolic disturbance (Spielel et al., 2005). But in Pakistan I have never seen any study in which both issues are present in diabetic patients like

cognitive emotion regulation and sleep problems. This is first study in Pakistan which worked both issues cognitive emotion regulation and sleep problems in diabetic patients.

### Objectives

1. To identify the effect of cognitive emotion regulation on insulin dependent diabetes mellitus.
2. To explore the relationship between sleep problems and insulin dependent diabetes mellitus.
3. To identify the effect of emotions on insulin diabetes mellitus.

### Hypotheses

These are the following hypotheses, current research based on these hypotheses:

H1 It was anticipated that cognitive emotion regulation is positively correlates with sleep problems in patients of insulin-dependent diabetes mellitus.

H2 It was hypothesized that Patients of insulin-dependent diabetes mellitus would show greater impairment on Cognitive emotion regulation & Pittsburg sleep quality index.

H3 It was assumed that patients of diabetes mellitus would show greater impairment on self-blame, other blame, rumination & catastrophizing as compared positive refocusing, positive reappraisal, acceptance & planning.

## LITERATURE REVIEW

The literature reviewed demonstrated that serious psychological distress has a significant negative impact on diabetes (Egede & Dismuke, 2012). Depression is linked with hyperglycemic and high level of diabetic complications. The prevalence of diabetic women is higher than diabetic men. In a controlled study depression is two times higher in diabetic peoples (Anderson et al., 2001). A recent study demonstrated that symptoms of depression increase the high risk of death among people with diabetes.

A study conducted in Medicare beneficiaries in the U.S. reported that co-morbid with depression and diabetes had a 36-38% increased risk in people. High level of depression in people with diabetes is associated with poor healthcare, poor quality of life, and increase rate of complications, increase cost and disability as well as increase risk of death (Leonard, Egede, & Charles, 2010). Low blood glucose level pays a significant effect on emotions, quality of life as well as interpersonal relationships (Clarke, 1997).

A recent study evaluates that emotional component play an important role in the development of diabetes in adults (Donald et al., 1979). In literature evidence suggested that fear of hypoglycemic has been significantly associated with diabetes and metabolic control and this condition leads to anxiety (Wild et al., 2007). In epidemic review obesity and diabetes also a major public health related problem people with diabetes .This study evaluates chronic psychological stress and

depression are associated with diabetes (Golden & Sherita, 2007).Psychological stress appears to affect both acute and chronic abnormalities in diabetes can cause neurological impairment and may cause permanent cognitive deficit (Cox et al., 1992).

Another study demonstrated that females are more likely to regulate their emotions by focusing on their problems as compares to male. Furthermore males are more likely to blame others for their own problems and negative emotions (Zlomke & Hahn, 2010). Adolescent with sever medical illness like type 1 diabetes experience stressful life event such as regulation in both low and high blood glucose and impairment in food intake. (Lefebvre & Levert, 2006). Studies present finding that there is a significant associated between depression and diabetes; depression is also associated with poor self management (Fisher, Gonzalez, & Polonsky, 2014). Depression is more common in people with diabetes as compared to general population and the symptoms and effect of depression is connected with lower quality of life (Scottish Intercollegiate Guideline Network, 2010).

It is supposed that the relationship between decreased sleep period and hormones that regulate appetite discussed that both are linked with increase the activity of sympathetic nervous systems. Furthermore the activity of the sympathetic nervous system is the central part for the adapting responses to the changing in the environment and stress. Reduce amount of sleep may be the results of increase activation of the sympathetic nervous system and the response of the stress may create alternation in the metabolic hormones (Arora, 2011).

An epidemiological literature suggests that deregulation of emotions or maladaptive emotion regulation strategies can significantly impair sleep (Fairholme et al., 2013).An epidemiological study conduct in Chinese adults that short and long duration of night time sleep may link with diabetes mellitus. The aim of the study examines the relationship between sleep duration and metabolic syndrome. This epidemiological study give finding that impaired sleep is a risk factor for the onset of diabetes mellitus (Jing et al., 2015). A hospital based cross-sectional study conduct in South India to check the effect of sleep problem among diabetic patients. Sleep pattern was assessing with PSQI. Regression analysis showed that higher risk of poor sleep associated with diabetes related complications with ratio of 3.5 (95% CI= 1.27 to 9.59 and p value is 0.5). Finding of the present study conclude that the prevalence of poor sleep is higher in diabetic patients as compared to non diabetic. Impaired or insufficient sleep quality is associated with poor glycemic control (Kodakandla, Meddela, & Pasha, 2016).

In a laboratory studies adults with type 1 diabetes experience reduce amount of sleep duration (jaser & Ellis, 2015). The contact of little sleep period on the risk of diabetes has been shown in numerous epidemiological studies, with a significant association between diabetes and difficulty in maintaining sleep and people who are experience chronic loss of sleep duration (Cauter et al., 2008).Experimental study present that less than 6 hours or more than 9 hours of sleep duration is associated with increased prevalence of diabetes mellitus ( Gottlieb et al., 2005). Mortality is

not a single cause of short or impaired sleep but it is also associated with sever health conditions like obesity and diabetes (Kripke et al., 2011). An earlier review show that short- term and long-term sleep durations has been linked with obesity and poor blood glucose, both are the main mechanism of the metabolic disease (Buxton & Marcelli, 2010).

Epidemiological studies indicates less than 6 hour sleep or more than 8 hour sleep can leads to psychological and physical problems. Recent literature gives evidence that there is a strong connection between impaired sleep and medical co-morbidities. Furthermore impaired sleep problems can leads to obesity, diabetes and increase level of tension as well as increase heart rate. Another study gives evidence that stress, depression and isolation is linked with sleep (Racine et al., 2013).

## METHODOLOGY

### Participants

In this study, 96 diabetic patients (48males, 48 females) were selected. The age range of participants was 20 to 40 years (M 27.61, SD 6.254). In inclusion criteria diabetic patients who take insulin or medication at least 1 year were included in the sample frame. The data collection was completed from May, 2016 until august, 2016. Patients were selected from department of general medical condition unit I and unit II from sheikh zaid hospital Rahim Yar Khan.

In exclusion criteria (a) no psychotic illness, (b) no co morbidity with chronic medical illness (e .g., renal disease). (c) no use of medication, (d) participants did not differ on the basis of age, gender, education and economic status. There were two questionnaire scale were used in this study to measure the psychological distress among diabetic patients and also among healthy group.

### Instruments

### Consent Form

A consent form was developed to inform participants about the nature of current study, its objective and data collection procedure. The rights of the participants were clearly mentioned on the consent form.

### Data Demographic Sheet.

The demographic information included name (optional), age, gender, education, occupation, area of residence, and monthly income (personal or family). This information collect from patients and also from healthy group.

### Cognitive Emotion Regulation Questionnaire (CERQ)

The CERQ is a 36 items self-reporting questionnaire with a5 point Likert response position (1 Almost Never to 5 Almost Always) expected to evaluate the scholarly parts of excited regulation (Garnefski et al., 2002). The review is displayed as takes after: Everyone gets ran up against with negative or disquieting events now and again and everyone respond to them in his/her own specific way. With the going with request, you are asked for that illustrate, what you generally think, when you experience negative or unsavory events.

## The Pittsburgh Sleep Quality Index (PSQI)

The PSQI is a reasonable instrument used to quantify the quality and case of sleep in the more prepared adult. It isolates "poor" from "incredible" rest by measuring seven spaces: subjective rest quality, rest lethargy, rest range, progressing rest adequacy, and rest aggravations, usage of rest pharmaceutical and daytime brokenness over the span of the latest month. The client self rates each of these seven domains of rest. Scoring of the answers relies on upon a 0 to 3 scale, whereby 3 reflect the negative astounding on the Likert Scale. An overall full of "5"or more-vast exhibits a "poor" sleeper. Regardless of the way that there are a couple of demands that request the appraisal of the client's bed mate or level mate, these are not scored, nor reflected in the joined instrument. A redesign to the scoring: if 5J is not completed or the quality is missing, it now considers a "0" (Buysse et al., 1989).

## Procedure

Research process was consisting of cross sectional research design by using purposive sampling technique. A purposive sample of 96 participants was selected for the present study. 96 Patients of insulin-dependent diabetes mellitus (48 male, 48 Females) data were drawn from Medical Unit 1 & Medical unit 2 of SZMC/H. First of all permission was taken from the relevant department after that data collection was started. Two instruments were selected Cognitive emotion regulation questionnaire and Pittsburgh Sleep Quality Index. Permission for the concerned author was already taken. We were build rapport to the patients. Before data collection structured clinical interview for disorders was taken on the basis of DSM-5 in which complete history of the patient to check either he/she have any psychological problem. If participants had any psychiatric problem then they excluded from the study. Then fill the data demographic sheet to the patient. 15 to 20 mints were used for one patient. First Cognitive Emotion Regulation questionnaire was administered and then Pittsburgh sleep quality index after the completion of this questionnaire obliged to the patient for their great cooperation.

## Sampling Technique

Purposive sampling technique used for the present study. Sample size was determined by Daniel-soper. It is a software or free online statistical calculator used to calculate sample size for data collection. Formula used for sample size determination was

| | |
|---|---|
| Anticipated effect size ($f^2$): | 0.15 |
| Desired statistical power level: | 0.8 |
| Number of predictors: | 3 |
| Probability level: | 0.05 |
| Minimum required sample size: | 76 |
| Addition: | 20 respondents |
| Total actual sample size was : | 96 |

## Statistical Analysis

Data was analyzed using SPSS (Statistical Package for Social Sciences) with its current version (2015) official name is being IBM SPSS Statistics. Statistical tools as frequency distribution, mean, SD, Regression Coefficient, Correlation Coefficient, t-score and ANOVA were used in the current study to analyze data.

## Operational Definition

### Diabetes Mellitus

Diabetes mellitus (DM) is a group of metabolic disease in which person has high level of blood sugar. Diabetes mellitus is one of the most harmful disease in which pancreas does not produce or create enough insulin as needed or required by the body (World Health Organization, 2010).

### Cognitive Emotion Regulation

Cognitive Emotion regulation is characterized and recognized from adapting, state of mind regulation, obstacle, and influence regulation. The field of emotion regulation guarantees new bits of knowledge into age-old exploration about how individuals deal with their emotions (Gross & James 1998).

### Sleep

Sleep is a period of rest and relaxing time for individuals mind and body. Sleep is a period in which person is consciously unaware and his body function is totally suspended.

## Ethical Consideration

Before conducting research, it is important to get consent from participants for their approval. So convent was obtained. Ethically it is important to assure participants that information provided by them would remain confidential. So confidentiality was followed. Participants are assured that their names would not be disclosed. In any case if disclosed, it would be anonymous. Names remained anonymous. Share your opinion and your ideas. Do not use unpublished data in your study. Give respect to your participants who are parts of your research. Give appropriate acknowledgement or praise to all contributions. Make sure never plagiarize. Avoid all types of discrimination on the basis of gender, age , race. Obey all laws that are related to your governmental and institutional policies. Show proper care and respect for animals. When conducting research on human subjects minimize harms and risks and maximize benefits; respect human dignity, privacy, and autonomy; take special precautions with weak populations; and strive to deal out the benefits and burdens of research fairly.

# RESULTS

In this chapter we discuss all results and analysis computed from the data collected from the target population. The main purpose of this study is to identify the effect of cognitive emotion regulation and sleep problem among patients of insulin dependent diabetes mellitus. For this purpose a sample of 96 respondents is collected. The aggregates of all scored items are used to get the score level. The numerical data was collected by using questionnaire method and CERQ (Cognitive

Emotion Regulation Questionnaire) is used which consist of 36 items with 5 point likert scale which have 9 sub scales. The aggregates of all individuals were calculated get their levels of cognitive emotion regulation. Another scale which is used is called PSQI (Pittsburgh Sleep Quality Index). Higher score of any respondent shows the high level cognitive emotion regulation and sleep problem among the target population. The data such collected is compiled and analyzed in using SPSS (Statistical Package for Social Sciences) with its current version (2015) being IBM SPSS Statistics.

**Table 1**

**Frequency distribution of sample according to gender**

| Gender | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Male | 48 | 50.0 | 50.0 |
| Female | 48 | 50.0 | 100.0 |
| Total | 96 | 100.0 | |

*Note*. The above table shows frequency distribution of overall sample according to gender. From the entire sample of size 96, 50% are male and the other 50% are female.

**Table 2**

**Descriptive Statistics of all the concerned variables under study**

| Variables | N | Minimum | Maximum | Mean | S.D |
|---|---|---|---|---|---|
| Age | 96 | 20 | 40 | 27.61 | 6.270 |
| Cognitive Emotion Regulation | 96 | 81 | 128 | 98.20 | 10.561 |
| Pittsburg Sleep Quality Index | 96 | 6 | 26 | 16.21 | 4.556 |

*Note*. The above table shows overall descriptive statistics of concerned variables which are included in this study. For the purpose of this study a sample of 96 people is selected at random. The age of the sampled population varies from 20 years to 40 years with average age of 27.61 years with std. deviation 6.27 years. The minimum level of Cognitive Emotion Regulation is 81 and maximum level score is 128. The average cognitive emotion regulation score of overall target population is 98.20 with std. deviation 10.56.Same as the minimum level of Pittsburg sleep quality index is 6 and maximum level score is 26. The average sleep quality index score of overall target population is 16.21 with std. deviation 4.55.

**Table 3**

**Relationship between cognitive emotion regulation with sleep problems in patients of insulin-dependent diabetes mellitus**

| Dependent Variable | R Square | Std. Error | Regression Coefficient | Correlation Coefficient | t-score | p-value |
|---|---|---|---|---|---|---|
| Cognitive Emotion Regulation | 0.004 | 4.670 | 0.061 | 0.060 | 0.583 | 0.562 |

Predictors: (Constant), Pittsburg Sleep Quality Index

The above table shows the regression and correlation analysis for the relationship between cognitive emotional impairment and sleep problems. From the results we conclude that Cognitive emotional impairment is positively correlated with sleep problems in patients of insulin-dependent diabetes mellitus. The value of regression coefficient is 0.061 and correlation coefficient is 0.060 showing the positive relationship with p-value 0.562 which is not significant at 5% level of significant.

**Table 4**

**Descriptive Statistics for the Comparison of self-blame, other blame, rumination & catastrophizing as compared positive refocusing, positive reappraisal, acceptance & planning among the Patients**

| Variables | N | Minimum | Maximum | Mean | S.D |
|---|---|---|---|---|---|
| Self-Blame | 96 | 16 | 29 | 19.30 | 1.629 |
| Other Blame | 96 | 18 | 20 | 19.50 | 0.808 |
| Rumination | 96 | 16 | 20 | 18.93 | 1.496 |
| Catastrophizing | 96 | 18 | 20 | 19.39 | 0.745 |
| Positive Refocusing | 96 | 8 | 12 | 9.29 | 1.589 |
| Positive Reappraisal | 96 | 6 | 12 | 7.39 | 1.644 |
| Acceptance | 96 | 6 | 10 | 7.10 | 1.612 |
| Refocus on Planning | 96 | 6 | 12 | 8.35 | 1.806 |
| Putting in to Perspective | 96 | 5 | 10 | 7.71 | 1.535 |

This table shows the descriptive statistics for comparison of all under study variables. The results indicate that patients of diabetes mellitus showing greater impairment on self-blame, other blame, rumination & catastrophizing as compared positive refocusing, positive reappraisal, acceptance & planning. Hence our hypothesis is accepted and true.

**Table 5**

**ANOVA Table for the Significance among the Patients**

| Source of variation | Sum of Squares | Df | Mean Square | F | p-value |
|---|---|---|---|---|---|
| Between Groups | 27599.190 | 8 | 3449.899 | 1588.581 | 0.000 |
| Within Groups | 1856.792 | 855 | 2.172 | | |
| Total | 29455.981 | 863 | | | |

P<0.01

*Note*. The above tables show the ANOVA for comparison of all the under study variables. The results indicate that patients of diabetes mellitus showing greater impairment on self-blame, other blame, rumination & catastrophizing as compared positive refocusing, positive reappraisal, acceptance & planning. ANOVA table used for the significance of results and p-value is 0.000 showing the test is significant at 1% level of significance

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## DISCUSSION

This section of the study aims at discussing the major findings of the current study in line with previous research findings reviewed in the literature. The main objective of the current study was examined that how cognitive emotion regulation and sleep problems effect the insulin dependent diabetes mellitus patients. We conclude that Cognitive emotion regulation is positively correlated with sleep problems in patients of insulin-dependent diabetes mellitus. By comparison of overall people the results indicate that patients of diabetes mellitus showing greater impairment on self-blame, other blame, rumination & catastrophizing as compared positive refocusing, positive reappraisal, acceptance & planning. We justify all these results through different researches based on emotion regulation, sleep problems and other psychopathological conditions and their linked with emotion regulation.

First hypothesis of the present study is that Cognitive emotion regulation is positively correlates with sleep problems in patients of insulin-dependent diabetes mellitus. There is a different previous study that sports this hypothesis. An epidemiological literature suggests that deregulation of emotions or maladaptive emotion regulation strategies can significantly impair sleep (Fairholme, et al., 2013). Another study examined that adults with type 1 diabetes experience more cognitive impairment and depressive symptoms rather than non diabetic adults (Brands et al., 2006). A study survey conducted in Boston Health care system suggested that feeling of depression; anxiety and sleep impairment were positively associated with type 1 diabetes (Seligowski, et al., 2013). Longitudinal studies suggest that despair, aggressive behavior, nervousness, stressful life experiences, feeling of fear as well as sleep problems are associated with diabetes (Pouwer et al., 2005).

In a laboratory studies adults with type 1 diabetes experience reduce amount of sleep duration (jaser, & Ellis, 2015). The contact of little sleep period on the risk of diabetes has been shown in numerous epidemiological studies, with a significant association between diabetes and difficulty in maintaining sleep and people who are experience chronic loss of sleep duration (Cauter, et al., 2008). Finding of our study conclude that cognitive emotion regulation is positively correlated with sleep problems in type 1 diabetes mellitus. Along with the support of these previous researches the first hypothesis is accepted.

Second hypotheses are that Patients of insulin-dependent diabetes mellitus would show greater impairment on Cognitive emotion regulation & Pittsburg sleep quality index. There are lots of previous studies that support this hypothesis which is already discussed in literature. A study conducted at University of Pittsburgh patients with diabetes mellitus suffer with sleep problem as compared to control group. Another study demonstrated that patients of type 2 diabetes mellitus are more likely to report being poor sleep. Patients of diabetes mellitus have more likely to low score on Pittsburgh index. In this study 3282 participant includes and the finding of the study shown diabetic patients has greater sleep impairment as compared to non diabetic participants (Surani, et al., 2015). Another study conducted in Italy on the link between sleep problem and diabetes. Finding suggests

that both poor sleep problem and efficient sleep are related to diabetes mellitus. The results of poor sleep is (p= 0.002) and sleep efficient is (r= 0.005) (Tsaia, et al., 2011). A cross-sectional data of diabetic patients 3,435 collect from the Prevention Health Center of National Cheng Kung Hospital China to check sleep problem by using Sleep Quality Index (PSQI). Sleep Quality Index is a valid questionnaire for assessing sleep quality. The finding of this study demonstrates that diabetes mellitus were positive associated with PSQI. Diabetic patients have shown greater impairment on PSQI score. The risk of poor sleeper is being higher in diabetic patients (Hung,et al., 2013). Many epidemiological studies reveled that adults with type 1 diabetes may experience sleep problems and these complications are significantly associated with poor cognitive abilities. Sleep problems play an important role in information encoding and memory. Sleep deprivation also leads to mood and emotions (Inkster, et al., 2016). Finding of the present study conclude that the prevalence of poor sleep is higher in diabetic patients as compared to non diabetic. Impaired or insufficient sleep quality is associated with poor glucose (Kodakandla, Meddela, & Pasha, 2016).

The third hypotheses is that patients of diabetes mellitus would show greater impairment on self-blame, other blame, rumination & catastrophizing as compared positive refocusing, positive reappraisal, acceptance & planning. We justify the results of this hypothesis through different researches on cognitive emotion regulation strategies like self-blame, other-blame, rumination, catastrophizing, positive refocusing, positive reappraisal, acceptance, and planning. Coping strategies such as self blame, other blame, rumination, catastrophizing significantly show greater risk in the development of depression in type 1 diabetes mellitus. As compared to positive re focusing, positive reappraisal, acceptance and planning (Kraaij, & Gernafski, 2012). A study conducted in Ningxia hospital china, in which two groups were selected and apply cognitive emotion regulation questionnaire to assess the regulation of emotions either which type of strategy are more use 450 patients and 400 normal participants were included in this study. The finding of the study was compared with control, patients. Diabetic patients significantly show increase score on rumination, other blame, catastrophizing and have low scoreon acceptance, positive refocusing, positive reappraisal and planning (Honglan, 2016).

Results of my study concluded that patients of diabetes mellitus show greater impairment on self-blame, other-blame, rumination and catastrophizing as compared to positive refocusing, positive reappraisal, acceptance & planning. Hence our hypothesis is accepted and true through different researches.

## CONCLUSION

Aim of the present study was to investigate the effect of cognitive emotion regulation and sleep problems among patients of insulin dependent diabetes mellitus. Many epidemiological studies reveled that young adults with diabetes may experience high risk of emotional and behavioral problems as compared to non diabetic adults. Moreover study concludes young people with type 1 diabetes have

greater risk of depression, anxiety, eating disorder as well as cognitive dysfunction and behavioral issues (National Institute for Health Care Excellence, 2004). Young people with type 1 diabetes experience lots of physical, psychological and emotional problems in everyday life task and it is very difficult for them to handle and cope with these difficulties (Erdal et al., 2015). Cognitive emotion regulation refers to the processes of attention and thinking which aim to alter the look, valence, amount and timing of emotional responses (Garnefski et al., 2001). Many epidemiological studies reveled that adults with type 1 diabetes may experience sleep problems and these complications are significantly associated with poor cognitive abilities. Sleep problems play an important role in information encoding and memory. Sleep deprivation also leads to mood and emotions (Inkster et al., 2016).

Sleep related complications are also common along with diabetic patients. Recent study give evidence that diabetes is positively associated with impaired sleep and the ratio is 90%. Sleep quality was assessed with Pittsburg sleep quality index in many patients with diabetes. Finding suggests that 68% diabetic patients experience sleep problems (singh, & Perlmuter, 2013). So results of the studies declared that Cognitive emotional impairment is positively correlated with sleep problems in patients of insulin-dependent diabetes mellitus. Healthy group use more cognitive emotion regulation as compared to patients they easily share their feelings that's why there should below average scores on these scales. So conclusion of this study is that diabetic patients have more sleep problems as compared to non diabetic population. The results indicate that patients of diabetes mellitus showing greater impairment on self-blame, other blame, rumination & catastrophizing as compared to positive refocusing, positive reappraisal, acceptance & planning.

## Limitation

This study was restricted to the only insulin dependence diabetes mellitus patients who were located to area of Sheikh Zaid Medical Hospital Rahim Yar khan campus. So results cannot generalize on the whole population.

## Implications

As recommended as a result of the current study, it shows that cognitive emotion regulation and sleep problems effect Insulin dependent diabetic patients' Furthermore, it is notable that diabetic patients show greater impairment on self blame, other blame, catastrophizing, & rumination as compared to positive refocusing, positive reappraisal, acceptance & planning.

.Consequently, a clinical implication of this study is that the forecast of having higher levels of cognitive emotion regulation and sleep problems for the duration of a stressful persistent diabetic treatment may possibly give therapeutic goals as well as medication for organization not only on the whole reaction to cure but too the flow of cognitive and emotional proceedings that eventually persuade the patient's cure experience.

Further research implications of the present study are that the impact of diabetes on emotions and sleep related problems, the level of both variables change according to patient's response. Findings of the present study give more help to those

students who have new research on cognitive emotion regulation and sleep problems among diabetic patients. Furthermore students can include these results in their own study in different ways as a literature or as a discussions part.

The study would be helpful for the health professionals to design the strategies required to deal with the emotional and sleep problems of the diabetic patients.

## REFERENCES


Aderson, R. J., Freedland, K. E., Clouse, R. E., Lustman, P. J. (2001). The Prevalence of como-

rbid Depression in Adults With Diabetes. *Diabetes Care*. *24*(6), 1069-1078.http://dx.doi

.org/10.2337/diacare.24.6.1069.

Alhola , p., & Kantola, P. (2007). Sleep deprivation: Impact on cognitive performance. Neuro

psychiatr Dis Treat. *3*(5), 553-567.

Arora, T. (2011). Sleep and its association with metabolic function across the life span.

Balfe, M., Doyle, F., Smith, D., Sreenan, S., Brugha, S., Hevey, R., Conroy, R. (2013). What's

distressing about having type 1 diabetes? A qualitative study of young adults' perspect-

ives. *BMC Endocrine Disorders*. 13-25. DOI: 10.1186/1472-6823-13-25

Boeka, A. G., & Lokken, K. L. (2008). Neuropsychological performance of a clinical sample of

extremely obese individuals. *Archives of Clinical Neuropsychology*, *23*, 467–474.

Buxton, O. M., & Marcelli, E. (2010). Short and long sleep are positively associated with obesity

diabetes, hypertension, and cardiovascular disease among adults in the United states. *Soc Sci Med, 71*, 1027-1036.

Buysse, D .J., Reynolds, C. F., Monk, T.H., Berman, S.R., & Kupfer, D.J. (1989). The Pittsburg

Sleep Quality Index: A new instrument for psychiatric practice and research. Journal of

Psychiatric Research, 28 (2), 193-213.

Brands, A. M., Kessels, C. P., Henselmans, L. M., Boter, B. W., Kappelle, J. L., De Haan, F.H

.,Biessels, J. G. (2006). Cognitive Performance, Psychological Well-Being, and Brain

Magnetic Resonance Imaging in Older Patients with Type 1 Diabetes. Neuropsychology,

*55*(6), 1800-1806. http://dx.doi.org/10.2337/db05-1226.

Cappuccino, P. F., Elia, D. L., Strazzullo, L., Miller, A. M. (2009). Quantity and Quality of
Sleep and Incidence of Type II Diabetes. A systematic review and meta-analysis.*33*
, 414-240. doi:10.2337/dc09-1124Diabetes Care February 2010.
Cauter, E. V., Spiegel, K., Tasali, E., Leproult, R. (2008). Metabolic consequences of sleep and
sleep loss. *Sleep Med*. *9*(01), S23–S28. doi: 10.1016/S1389-9457(08)70013-3
Charles, Hiroaki, & Marta, (2016). Prevalence of diabetes in world-wide. *7*(8). http://www.omi
csonline.org/diabetes-metabolism.php.
Cho, H. E., Lee, J. H., Ryu, H. O., Choi, G. M. (2014). Sleep Disturbances and Glucoregulation
in Patients with Type 2 Diabetes. J Korean Med Sci, *29*(2): 243-247. doi: 10.3346/jkms
.2014.29.2.243.
Clark, L. (1997). The emotional social and behavioral implications of insulin Neuropsychiatry. *2*
(1),57-65.
Cox, Daniel J., Gonder-Frederick, Linda. (1992). Major developments in behavioral diabetes
research. Journal of Consulting and Clinical Psychology, 60(4), 628- 638. http://dx.org
/10.1037/0022-006X.60.4.628.
Czech, J. S., Orsillo, M. S., Pirraglia, M. D., Thomas, M., Connell, J. A. (2015). A Association
Between Specific Depression Symptoms and Glycemic Control Among Patients With,
Comorbid Type 2 Diabetes and Provisional Depression. *J Prim Care Companion CNS*
*Disord* .*17*(5), doi:10.4088/PCC.14m01754 10.4088/PCC.14m01754

De Groot, M., Anderson, R., Freedland, K. E., Clouse, R. E., Lustman, P. J. (2001).Association
of depression and diabetes complications: A meta-analysis*. Psychosomatic Medicine, 63,* 619-630.
Diane, C. Z., Nancy, A. B., Mugdha, G. (2006). Sleep Impairment in Patient with Painful for
Diabetic Peripheral Neuropathy. Clinical journal of pain, *22*(8): 681-685. Doi: 10109
7/01.ajp.0000210910.49923.09.
Donald, E., Greydanus, M. D., Adele, D., Hofman, M. D. (1997). Psychological Factors in
Diabetes MellitusA Review of the Literature With Emphasis on Adolescence**.** *Am J Dis Child .133*(10):1061-1066. doi:10.1001/archpedi.1979.02130100085017

Drum, D., & Zierenberg, T. (2005). Type II diabetes source book (3rd ed). USA: McGraw-Hill
Companies.
Egede, L. E., Dismuke, C. E. (2012). Serious Psychological Distress and Diabetes: A Review of
the Literature. *14*(1). 15-22. DOI: 10.1007/s11920-011-0240-0.

Ekstedt, M., Akerstedt, T., Soderstrom, M. (2004). Microarousals during sleep are association
with increased levels of lipids, cortisol and blood pressure. Psychosomatic Medicine, *66*
(6), 925-931.
Erdal, A., Onalatilla, E., Yalcmhassan, O., Aydm. (2015). Recognizing the Psychosocial Aspects
of Type 1 Diabetes in Adolescents. J Clin Res Pediatr Endocrinol, *7*, 57-62. Doi: 10.42
74/jcrpe.1745
Fariholme, P. C., Nose, L. E., Nillni, I. Y., Schumacher, A. J., Tull, T. M., Coggey, F. S. (2013).
Sleep disturbance and emotion dysregulation as transdiagnostic processes in a comorbid
Sample. Behav Res Ther, 51(9), 540–546.
Fisher, L., Hessler, D. M., Polonsky, W. H., et al. 2012. When is diabetes- distress, clinically ,
Meaningful? Establishing cut points for the Diabetes Distress Scale. *Diabetes Care, 35*
(2), 259–64. doi: 10.2337/dc11-1572.
Fisher, L. Gonzalez, J. S., Polonsky, W. H. (2004). The confusing tale of depression and distress
In patients with diabetes: a call for greater clarity and depression.
Gamble, K. L., Berry, R., Frank, S .J. (2014). Circadian clock control of endocrine factors.
*10*(8). 466-75. doi: 10.1038/nrendo.2014.78.
Gangwisch, J. E., Malaspina, D., Babiss, L. A. (2010). Short sleep duration as a risk factor for
hypercholesterolemia: analyses of the National Longitudinal Study of Adolescent &
Health. *Sleep, 33*, 956-961.
Garnefski. N., Legerstee J., Kraiij. V.V., Kommer, V.T., and Teerds, J. (2002). Cognitive coping
strategies and symptoms of depression and anxiety. A comparison between adults &
adolescents. Journal of Adolescence, *25*, 603-611
Gonder-Frederick, L., and Cox, D. (1997). The psychosocial impact of sever hypoglycemic and
episodes of souses of patients with IDDM. *Diabetes care*. *20*(10), 1543-6.

Gross, & James, J. (1998). The emerging field of emotion regulation: An integrative review. *2*,
271-199. http://dx.doi.org/10.1037/1089-2680.2.3.271
Gottlieb, D. J., Punjabi, N. M., Newman, A. B., Resnick, H. E., Redline, S., Baldwin, C. M.,
Nieto, F. J. (2005). Association of sleep time with diabetes mellitus and impaired glu-
cose tolerance. *Arch Interm med. 165*(8), 863-7. Doi: 10.1001/archinte.165.8.863.

Graue, M., Larsen, T., Peyrot, M., Rokne, M. (2014). Relationships of diabetes-specific and
emotional distress, depression, anxiety, and overall well-being with HbA1c in adults
persons with type 1 diabetes.*77*(3),174-179.DOI: 10.1016/j.j.psychores.2014.o6.015
Golden, Sherita H. (2007). A Review of the Evidence for a Neuro-endocrine Link Between
Stress, Depression and Diabetes Mellitus. *3*(4). 252-259(8).
Honglan. (2016). The investigation to cognitive emotion regulation of diabetic patients with
depression. *Journal of Ningxia Medical University*.
Hung, C. H., Yang, C. Y., Ou, Y. H., Wu, S. J., Lu, H. F., Chang, J. C. (2013). The Association
between Self-Reported Sleep Quality and Metabolic Syndrome. Htpp://dx.doi.org/10.1371
/journal.pone.0054304.
Inkster, B., Frier, M. B. (2012). The effects of acute hypoglycaemia on cognitive function in type
1 diabetes. British Journal of Diabetes & Vascular Disease, *12*(5), 221-226.
Inkster, E. B., Zammitt, N. N., Ritchie, J. S., Morrison, I., Frier, M. B. (2016). Effects of Sleep
Deprivation on Hypoglycemia-Induced Cognitive Impairment and Recovery in Adults
With Type 1 Diabetes. *Diabetes Care. 39*(5), 750-756. http://dx.doi.org/10.2337/dc15
2335.
Jacobsen, P. B., Andrykowski, M. A., Thors, C. L. (2004). Relationship of catastrophizing to
fatigue among women receiving treatment for breast cancer. *J Consult Clin Psychol. 72*,
355–61.

Jaser, S. S., & Ellis, D. (2015). Sleep in adolescents and young adults with type 1 diabetes: The
associations with diabetes management and glycemic control. 49-55. http://dx.doi.org/10.

1080/21642850.2015.1135293.
jing, W. U., Guigiang, U. X., Lijun, S., Yanmei, Z., Lulu, S., Sivi, Y., Handong, Y., Yuan, L.,
Tangchun, W. C., Youjie, W. (2015). Daily sleep duration and risk of metabolic syndrome
among middle aged and older Chinese adults: cross-sectional evidence from the Dongfeng
-Tongji cohort study. *15*(178). Doi: 10.1186/s12889-015-1521-z.
Kakleas, B., Kandyla, C., Karayianni, K., Karavanaki, B. (2009). Psychosocial problems in
adolescents with type 1 diabetes mellitus Problèmes psychosociaux des adolescents and
atteints de diabète de type 1 (DT1). Diabetic Clinic. *35*(5), 339-350. Doi : 10.1016/j.diab
2009.05.002.
Kalra, S., Kalra, B., Agrawal, N., Sahay, R., Unnikrishnan, A., Chawla, R. (2009). Coping stra-
tegies In Diabetes. The Internet Journal of Geriatrics and Gerontology. *5*(2).
Kodakandla, K., Maddela, G., Pasha, M. S. (2016). Factors influencing sleep quality and its
impact on glycemic control in patients with type II diabetes mellitus - A hospital based
cross sectional study. *3*(5): 138-145.
Khuwaja, K. A., Lalani, S., Dhanani, R., Azam, S. I., Rafique, G., White, F. (2010). Anxiety and
depression among outpatients with type 2 diabetes: A multi-centre study of prevalence &
associated factors. *Diabetology & Metabolic Syndrome*. *2*(72), Doi: 10.1186/1758-5996-
-2-72.

Knutson, K. L., Spiegel, K., Penev, P., Cauter, V. V. (2007). The metabolic consequences of
sleep deprivation. *11*(3), 163-178. http://dx.doi.org/10.1016/j.smrv.2007.01.002.
Kraaij, V., Garnefski, N. (2015). Cognitive, Behavioral and Goal Adjustment Coping, depressive
Symptoms in Young People with Diabetes : A Search for Intervention targets for coping
Skills Training. Journal of Clinical Psychology in Medical Settings, *22*(45), Doi: 10.1007
/s10880-015-9417-8.

Kraaj, V., Gernafski, N. (2012). Cognitive, Behavioral, and Goal Adjustment , Coping and
Depressive Symptoms in Young People with Diabetes: A Search for Intervention Targets
for Coping Skills Training. J Clin Psychol Med Settings. *22*(1), 45–53. Doi: 10.1007/s1
0880-015-9417-8.
Kripke, D. F., Langer, R. D., Elliott, J.A., Klauber, M. R., Rex, K. M. (2011). Mortality related
to actigraphic long and short sleep. *Sleep Med .12*, 28-33.
Leonard, E., Egede, A. B., Charles, E. B. (2010). Diabetes Atlas Diabetes and depression: Global
perspectives. Department of Medicine, Center for Health Disparities Research.
Lefebvre, H. & Levert, M. (2006). Sudden and unexpected health situation: From suffering to
resilience. *Illness, Crisis, & Loss, 14*, 337-354.
Linda, F. G., Daniel, C. J., Sharon, B. A., James, P. W., (1989). Mood changes associated with
with blood glucose fluctuations in insulin-dependent diabetes mellitus. *8*(1), 45-59. Doi:
org/10.1037/0278-6133.8.1.45.

Marvel, & Paradiso. ( 2004). Cognitive and neurological impairment in mood disorders.Psychiatr
Clin North Am. *27*(1), 19-viii. doi: 10.1016/S0193-953X(03)00106-0.
Martins, C. R., Andersen, L. M., Tukif, S. (2008). The reciprocal interaction between sleep and
type 2 diabetes mellitus: facts and perspectives. *Braz J Med Biol Res*. *41*(3) 180-187
(Review).
Mstch, J., Tillil, H., Kobberling, J., Sartory, G. (1995). On the relationship among psychological
distress, diabetes-related health behavior, and level of glycosylated hemoglobin in type
1 diabetes. International Journal of Behavioral Medicine, *2*(2), 104-117. DOI: 10.1207/
s15327558ijbm0202_2.
Moulton, C., Oickup, J., & Ismail, K. ( 2015) .The link between depression and diabetes: search
for shared mechanisms. DOI: http://dx.doi.org/10.1016/S2213-8587(15)00134-5.
National Institute for Health and Care Excellence. 2004. Type 1 diabetes: diagnosis and mana-
gement of type 1 diabetes in children, young people and adults. Retrieved from www.

nice.org.uk/Guidance/CG15.
Pourabbasi, A., Tehrani, M., Qavam, S., Larijani, B. (2016). Evaluation of the correlation
between type 1 diabetes and cognitive function in children and adolescents, and comparison of this correlation with structural changes in the central nervous system: a study protocol. Diabetes and endocrinology. doi:10.1136/bmjopen-2015-007917
Pouwer, F., Skinner, T. C., Pibernik, M., Beekman, A. T., Cradock, S., Szabo, S., Metelko, Z.,
Metelko, Z., Snoek, F. J. (2005). Serious diabetes-specific emotional problems and depression in a Croatian-Dutch-English Survey from the European Depression in Diabetes Research Consortium. Diabetes Res ClinPract, *70*(2), 166-73.

Racine, C., Kalra, K., Ceide, M., Willians, J. N., Zizi, F., Mendlowicz, V. M., Louis, J. G. (2014)
. Sleep Duration, Insomnia Symptoms, and Emotion Regulation among Black Women. J
Sleep Disord Ther. *2*(122), doi: 10.4172/2167-0277.1000122.
Seto, S. W., Yang, Y. G., Kiat, H., Bensoussan, A., Kwan, W. Y., Chang, D. (2015). Diabetes
Mellitus, Cognitive Impairment, and Traditional Chinese Medicine. 14. http://dox.doi.
org/10.1155/2015/810439.
Scottish Intercollegiate Guidelines Network. 2010. *116, Management of Diabetes: A national*
*clinical guideline*. Edinburgh, Scotland: SIGN. Retrieved from www.sign.ac.uk/pdf/ sign116.pdf.
Singh, P. S., and Perlmuter, C. L. (2013). The effect of family history of diabetes on sleep quali-
ty,of depression, and anxiety in adult males with diabetes. *Journal of diabetes mellitus.*
*3*(1). 4. DOI:10.4236/jdm.2013.31002.
Sipra, A., Chen, L., Wu, M., Yaffe, K. (2014).Impact of Sleep on the Risk of Cognitive Decline
And Dementia. Curr Opin Psychiatry. *27*(6), 478 483. Doi: 10.1097/YCO. 000000000 0000106.
Solowiejczyk, R.N., Johnson, Milpitas, C., Vivian, F. (2012). American Diabetes Association.
Diabetes Technology & Therapeutics.
Spielel, K., Knutson, K., Leproult, R., Tasali, E., Cauter, V. E. (2005). Sleep loss: a novel risk
factor for insulin resistance and Type 2 diabetes. Journal of applied psychology. *99*(5), Doi: 10.1152/japplphysiol.00660.2005.

Spiegel, K., Tasali, E., Leproult, R., Cauter, E. V. (2009). Effects of poor and short sleep on
glucose metabolism and obesity risk. *Nature Reviews Endocrinology 5*, 253-261 (May
2009) | doi:10.1038/nrendo.2009.23
Surani, S., Brito, V., Surani, A., Ghamande, S. (2015).Effect of diabetes mellitus on sleep quality
. *World J Diabetes*. *6*(6), 868-873. Doi: 10.4239/wjd.v6.i6.868.
Tsaia, W. Y., Kann, H. N., Tungc, H. T., Chaoa, J. Y., Line, J. C., Changa, C. K., Changa, S. K.,
Chena, Y. J. (2011). Impact of subjective sleep quality on glycemic control in type 2
diabetes mellitus. *Family Practice*. doi: 10.1093/fampra/cmr041.
Thomas, J., Jones, G., Scarinci, I., & Brantley, P. (2003). A descriptive and comparative study
of the prevalence of depressive and anxiety disorders in low income adults with type 2
diabetes and other chronic illnesses. *Diabetes Care, 26,* 2311-2317.
Tol, A., Baghbanian, A., Sharifirad, G., Shojaeizadeh, D., Eslami, A., Alhani, F., Tehrani, M.
(2012). Assessment of diabetic distress and disease related factors in patients with type
2 diabetes in Isfahan: A way to tailor an effective intervention planning in Isfahan-Iran.
*J Diabetes Metab Disord* . *11*(20), doi:10.1186/2251-6581-11-20.
Van-Dooren, F. E., Nefs, G., Schram, T. M., Verhey, F. R., Denollet, J., Pouwer, F. (2013).
Depression and Risk of Mortality in People with Diabetes Mellitus: A Systematic
Review and Meta-Analysis. http://dx.doi.org/10.1371/journal.pone.0057058

Vinicor, F. (2004). Diabetes a to z (5th ed). New Delhi: American Diabetes Association, Inc.
Weinger, K., & Jacobson, A. M. (1998). Cognitive impairment in patients with Type 1 (insulin-
dependent) Diabetes Mellitus. *Central Nervous System Drugs, 9,* 233-252.
Wild, D., Maltzahn, R., Brohan, E., Christenc, T., Clauson, P., Gonder, L. (2007). A critical &
review of the literature on fear of hypoglycemia in diabetes: Implications for diabetes
management and patient education. Patient education and counseling. *68*(1), 10-15.http
://dx.doi.org/10.1016/j.pec.2007.05.003.

World Health Organization. (2010). Diabetes. Retrieved April 12, 2010, from http://www.who
.int/diabetes/en/.
World Health Organization Eastern Mediterranean Region. (2010). Retrieved April 12, 2010,
2010, from http://www.who.int/diabetes /facts/world_figures/en/index2.html.

Yavari, A., & Mashinchi, N. (2010). Diabetes and Depression. Journal of stress Physiology and Biochemistry, *6*(3), 38-43.

Zlomke, K. R., & Hahn, K. S. (2010). Cognitive emotion regulation strategies: Gender difference and associations to worry. Personality and Individual Differences, *48*, 408-411. doi: 10.1016/j.paid.2009.11.007