



ISDC2014 CONFERENCE PROCEEDINGS

ISBN: 978-967-0474-74-8

COGNITIVE BEHAVIORAL THERAPY (CBT) FOR TYPE 2 DIABETES IN MALAYSIA

Seyed Reza. Alvani* & Norzarina Mohd Zaharim

*sralvani79@yahoo.com
Universiti Sains Malaysia

Abstract

Diabetes is on the rise around the world and highly prevalent condition in Malaysia as well. Therefore, estimating its prevalence and finding better ways of coping with everyday demands of diabetes is crucial. Co-morbid psychological factors such as stress, and well being in diabetics is associated with level of glycemia and diabetes complications. This paper introduces a group cognitive behavioral therapy (CBT) for better control of glycemia in people with type 2 diabetes in Malaysia. It describes the contents and structures of group CBT for diabetic people with a focus on psychological complications. Expected results will focus on the effect of this therapy on psychological complications such as, stress, and well being which can affect level of glycemia in type 2 diabetes. Therefore, by implying this technique on diabetics, this study will attempt to shed further light on the effectiveness of group CBT as the complimentary methods to regular medication treatment for better control of blood sugar, and bridge the gape in the investigation into the effectiveness of group CBT by linking psychological facts to diabetes.

Keywords: *psychotherapy, Type 2 Diabetes, stress, well-being, glycemic control*

INTRODUCTION

The need for the study of diabetes in Malaysia

Diabetes Mellitus is a global health problem and numbers of diabetics are increasing around the world (Alberti et al., 2004; Amos, McCarty, & Zimmet, 1997; King, Aubert, & Herman, 1998). This rising trend is due to many factors such as, population growth, urbanization, aging, and changes in life style and physical patterns (Wild, Roglic, Green, Sicree, & King, 2004). Undoubtedly, given that there is a major shift in the lifestyle and longevity of population, Malaysia will most certainly be affected by a diabetes epidemic (Yun, Hassan, Aziz, Awaisu, & Ghazali, 2007), and this is corroborated by the fact that the prevalence of diabetes mellitus in Malaysian population, specifically among the adults, has increased from 0.65% in 1960 to 10.5% in 1996 (Mafauzy, 2006a). When compared to the estimation by the International Diabetes Federation (IDF) for all regions in the world, it is observed that the prevalence of diabetes in Malaysia is above the average (Letchuman et al., 2010).

In 1985, the population of diabetic individuals in the world was estimated at 30 million, but by 1995 this figure had soared to 135 million (Zaini, 2000). Based on the current trend at that time, epidemiologists predicted that the population of diabetic individuals will swell up to a staggering 300 million by the year 2025, with more than half of this increment occurring in Oceania.

In Malaysia, the First National Health and Morbidity Survey (NHMS 1) conducted in 1986 reported a prevalence of diabetes mellitus of 6.3% and ten years later, in 1996, the Second National Health and Morbidity Survey (NHMS 2) found that prevalence rose to 8.2%. The prevalence was reported to be higher at 10.5% according

to a study in Kelantan. The WHO at that time has estimated that in 2030, Malaysia would have a total number of 2.48 million diabetics compared to a mere 0.94 million in 2000, marking a 164% increase (Mafauzy, 2006b). As a matter of fact, the third National Health and Morbidity Survey (NHMS3) results have shown that Malaysia has already reached the projected prevalence for the year 2025. In addition, Dr Hilary King of WHO pointed out that there will be a projected rise of about 42% in developed countries whereas the developing countries will see an escalation to the magnitude of 170% (Zaini, 2000). The prevalence of type 2-diabetes in those aged between 30 and 50 years in developing countries is also high in comparison with other countries (Cockram et al., 1993; Kim et al., 2006; Lu, Yang, Wu, Wu, & Chang, 1998; Takahashi et al., 2000). On the contrary, in the case of Malaysia, there are no known specific curricula written for group therapy with adults who have type 2 diabetes which emphasized on the aspects of psychological factors to reduce misery of diabetes (Debono & Cachia, 2007; DeVries, Snoek, & Heine, 2004; Edmunds, Roche, Stratton, Wallymahmed, & Glenn, 2007; Kramer, Ledolter, Manos, & Bayless, 2000) that targets patients' coping skills through a cognitive behavioral therapy orientation. This matter is of particular importance especially when considering that diabetes distress and psychological well-being are often a co-morbid diagnosis for those with diabetes (Goldney, Phillips, Fisher, & Wilson, 2004).

Group Psychological Interventions for Diabetic People

CBT encompasses a broad range of theories, models, and techniques, all of which are designed to promote positive change from a combined cognitive and behavioral perspective. As such, little consistency exists across studies with respect to the exact therapy protocols used with psychiatric and medical conditions, including diabetes. Any inconsistencies notwithstanding, several researchers have shown relationships exist among depression, self-esteem, education, and exercise as they relate to adherence to diabetic regimens. Lustman and his colleagues (1998) studied the effect of CBT in the treatment of depression among 42 patients with both major depression and type 2 diabetes. The intervention included disputing irrational beliefs by attempting to restructure individual's thoughts, perceptions and beliefs, and self-monitoring. Depression was remitted in a greater percentage of those treated with CBT than the controls, and there was improved glycemic control. Non-remission of depression was also associated with lower compliance with medical regimen and higher weight. Lustman and colleagues (1998) also identified psycho-education as one of the cornerstones of diabetic treatment. Psycho-education benefits diabetic people, who feel overwhelmed by the demands of a diabetic regimen, even though they might not be considered depressed by clinical standards.

An earlier study, Forlani et al. (2009) compared an Elementary Nutritional Education (ENE) group program with a group CBT among type 2 diabetes people and they discovered the association of group CBT with less usage of insulin however, their metabolic control didn't change significantly (Forlani et al., 2009). In a different study Der Ven et al. (2005), conducted a study to assess the effect of group CBT on glycemia control and the well being in type 1 diabetes people. They couldn't find any significant changes in level of HbA1c, whilst improvement in well-being followed by decreased in level of distress and depression (Der Ven et al., 2005). In line with these studies, Karlsen et al. (2003) designed a study to determine whether a group based counselling program with emphasize on CBT approaches resulted decrease in diabetes related stress and improve on psychological well-being as well as achieving glycaemic control closer to an acceptable level. They mentioned that program had the potential to reduce the level of stress as well as achieving better glycemic control and improvement in psychological well-being after 6 months follow-up (Karlsen, Idsoe, Dirdal, Rokne Hanestad, & Bru, 2004). In more recent study with similar topic, Gonzalez and McCarl (2010) worked on adults with type 2 diabetes. They used CBT to influence, adherence and depression symptoms in diabetes participants. At the end of program they found decrease in depression severity and improvement in diabetes self-care as well as better control over glycemic level (Gonzalez & McCarl, 2010). These short interventions aimed at reducing psychological arousal in adults, whom were not successful in control of psychological variables (like stress and depression) which effect on glycemic control. These findings suggest that diabetes people had good respond to psychological intervention with regard to better control of glycemia level. As previously mentioned, the researcher couldn't find any evidence regarding the study of psychological intervention on Malaysian diabetes sample. The only research had done by Al Haddad (2008), was a thesis with relevant content, entitled as, diabetes self-management program among diabetes adults in Universiti Sains Malaysia. It was a comparison between structured and less structured educational programs with 4 months follow up. Al Haddad found significant reduction in HbA1c among structured intervention group where as less structured group resulted in unexpected significant increase in HbA1c after intervention (Al-Haddad, 2008). He mentioned only structured group showed significant increase after the program in diabetes care factor. In addition he measured participant's attitude towards diabetes and found negative attitude decreased and positive attitude increased in structured intervention group (Al-Haddad, 2008). Although this study was not about CBT but it is important as the only psychological intervention on diabetes Malaysian sample. As discussed, due to the diabetes complications and chronicity risk factors such as obesity, lifestyle modification is crucial for the long term living with diabetes. People must learn how to adopt lifelong, low-fat eating habits and regular activity

patterns and monitor it during their entire life to modify their lifestyle.

METHODOLOGY

The process of data collection will divide in two phases. Phase one will investigate inclusions criteria (such as, participants should have been diagnosed with type 2 diabetes mellitus at least a year before entering to therapy, and level of HbA1c > 8) and exclusion criteria (such as, no history of severe psychological problem). The second phase, group CBT will apply to participants who are interested to join to the program for entire 3 months. Eight therapy sessions will conduct for experimental groups. First month there will be weekly sessions and the rest will be once every two weeks. Psychological instruments (such as, stress and well-being) will employ in two different times on all participants. Once before entering any participants to therapy (pre-test) and next time after finishing therapeutic sessions (post-test) on all participants.

Procedure of Therapy

In this study, three strategies will be used according to group CBT:

- a. Behavioral strategies to involve patients in pleasurable social and behavioral activities.

Monitoring glucose regularly, following a meal plan, and correctly preparing and remembering to take oral medications at the right time are practiced. Learning how to prevent and control the negative responses to stress is helpful, particularly if the causes are relatively permanent. Patients are asked to record situation that lead to stress. For example, if cooking dinner, bathing children, and doing laundry constitute a typical stressful evening, and that stress is a relatively permanent part of life for several years, it must be dealt with accordingly.

- b. Problem solving procedures to help resolve stressful circumstances.

Many individuals with diabetes have set global vague goals that may exacerbate stress. "Lose weight," "take better care of my diabetes," and "improve my glycemic control" are examples of vague and unhelpful goals.

Examples of realistic, measurable goals include, "I will walk 20 minutes each day on Monday, Wednesday, Friday, and Saturday at 5:00 p.m.," "I will drink diet cola instead of cola with sugar"; and "I will lose 5 kg over the next 9 weeks by following my meal plan and increase my walking time to 30 minutes for 5 days per week."

- c. Techniques to identify distorted or maladaptive thought patterns, and replace them with more accurate, adaptive, and useful views.

People with diabetes need to believe that the outcome of the treatment will be positive, such as acceptable glycemic control leading to a lower risk of developing diabetes complications. They have to be confident that they will be able to adopt appropriate behavior to fight their condition.

Negative feelings in patients with diabetes can be a result of multiple experiences of failure and pessimistic attitudes towards diabetes and one's self. This negative cycle of events that can ultimately lead to a state of emotional exhaustion is defined as diabetes burnout.

Situation: (I have high blood glucose); Thoughts: (I will never be able to get my diabetes under control); Feeling: (sad, down, and angry); Behavior: (Doing nothing, letting it all go).

The eight therapy sessions will have same structure and contain the same procedure. Each session will have four parts:

Part (1), greeting and sharing of notes and Blood Glucose diary sheet;

Part (2), sharing thoughts about the progress in the previous week and problems in the "here and now," and a group decision is made regarding which thoughts to concentrate on and deal in this session (1-2 thoughts);

Part (3), relaxation techniques, the use of imagery, and reading of affirmations; and

Part (4), to give summary and feedback, and setting of homework for the coming week.

Before talking about the four parts of the sessions in more detail, the type of therapy for the patients should be discussed first. The most important things that can separate this type of therapy from other types is the "be

your own therapist" technique, wherein certain methods are used to allow a patient to have "control" over his own health and his own life.

Part 1

Filling up the Blood Glucose (BG) diary sheet is compulsory for all patients. In each column, patients will describe how they felt during the day. They will also list the food they ate under the column "What you ate." The column, "What is your comment about what you feel about it now," should also be filled up. The person may ask himself, "Why are we doing this?" The answer to this question is that this exercise will help the person gain control over his health and treatment. All the patients must be able to look over what they ate and how they felt about it. The BG sheet will document all these information, which this study will utilize for comparison with previous information. Every night, before going to bed, the participants will write down their experiences during the day and evaluate the information according to their ideas. At the beginning of each new session, therapist will give them new forms for the upcoming week. The therapist will compare the forms and attempt to identify the association of higher levels with the food they had. The therapist will also determine their diet performance and acknowledge the progress for that week.

Part 2

Part 2 usually lasts for 30 minutes. Each group member will attempt to list his or her (list his or her what?) through process whenever a decision needs to be made in eating a certain food. A person's thoughts have great influence on his or her emotions and behavior. With the help of the therapist, the patients will be asked to try to identify a particular problem, and evaluate what are the thoughts that are going through their mind at the time of the problem. Next, the validity of the thoughts will be evaluated through examining the evidences that support the accuracy or the contradiction of the thought, and making a functional plan of action creates a response to the dysfunctional thoughts and beliefs. When dysfunctional thoughts are challenged by rational reflection, one's emotions generally change. The best way to accomplish this is by staying in the "here and now" focus about being diabetic. An individual can make decisions based on that thought and can go over the process regarding that thought. Encouragement is given whenever they are unable to come up with a thought. The therapist will guide them in identifying the food they ate the past week that they should not have, such as a sugary snack, and encourage them to write their emotions after eating.

Here-And-Now Focus

The here-and-now refers to the focus on the interpersonal current relationships within the group. The focus in the here-and-now activity is of paramount importance in Yalom's theory (sharing the raw, honest thoughts and feelings about what's happening in the moment) and is a concept that patients need to be familiar and comfortable with to facilitate an interpersonal process-oriented group (Yalom, 1995). For this reason, a therapist should discuss this concept in greater detail than any other concepts in this theory. To implement a here-and-now focus, patients need to know that this process occurs on two levels: an "experiential" level and an "illumination of process" level. In the experiential level, group members experience feelings in the here-and-now activity. Some of these feelings will be strong and will affect other group members, the facilitator, and the group as a whole. The focus of this portion of the group will be based on these feelings. The identification and sharing of these feelings with the group is one of the primary goals of each member. The here-and-now focus will remain incomplete without the second level, the illumination of process. The "process commentary" (i.e., explaining what the patient observed/heard happening in the group) on the events that occur in the here-and-now activity should be facilitated. Experience is insufficient to facilitate change; therefore, experience must be accompanied by interpersonal learning, which occurs through process commentary (e.g., reflection on the experience and sharing it in the group). Thus, the therapist has two tasks: 1) facilitate a here-and-now focus, and 2) lead the group in an exploration of the here-and-now experiences (e.g., thoughts, feelings, behaviors, and interactions). The group will live in the here-and-now experience, and then reflect back on the thoughts, feelings, behaviors, and/or interactions that have occurred. Some techniques may aid therapists in activating a here-and-now focus; however, therapists are strongly encouraged not to rely on these techniques alone in a prescriptive format, rather to understand the purpose and intent behind the techniques. The therapist's focus should be on attempt to bring each group session, each event into the here-and-now experience. The therapist should reflect on questions such as, "How can I get this discussion into the here-and-now?" This will help keep the therapist in a here-and-now focus. This focus should be achieved as early as the first group session. For instance, the therapist may interrupt the group with a process comment after group introductions and initial discussions. Yalom provides the following narrated example:

"We've done a great deal here today so far. Each of you has shared...But I have a hunch that something else is going on, and that you are sizing each other up, each arriving at some impressions of the other, each wondering how you will fit in with the others. I wonder now if we could spend some time discussing what each of us has come up with thus far."

Clearly, from this example, the therapist can directly influence a here-and-now focus. The occurrence of group members talking to the therapist should be identified and group communication should be encouraged. Other examples of moving the focus to a here-and-now focus will be presented in the training sessions. Another strategy is to provide feedback on how to ask and give feedback to and from other group members. It may be necessary for clients to check out their beliefs with the group occasionally. The therapist should help clients avoid group questions, such as "Do you like me?" in favor of more effective questions such as "What is it about me that you like most and least?" This type of activity promotes process commentary and includes the following sequence:

- a. A description of the behavior. Clients learn to see themselves as others see them.
- b. The impact of your behavior on others. Clients learn how their behavior makes others feel.
- c. The impact of your behavior on other's attitudes toward you. Clients learn how others feel about them because of their behavior.
- d. The impact of your behavior on your attitude toward yourself. Clients learn how their behavior influences their own attitude about themselves.

Deal with thought

According to the CBT core beliefs, people with diabetes fall into three categories:

- a. Being demanding toward one's self (e.g., "I must adhere to my diabetes regimen in all circumstances, otherwise I am not a good patient.");
- b. Being demanding toward others (e.g., "My doctor must always listen to me, or else he is a bad doctor."); and
- c. Being demanding toward the world (e.g., "My life must always be enjoyable, or else it is not worth living.").

Holding these irrational beliefs can easily cause feelings of frustration and result in dysfunctional behaviors, which lead to poor diabetes control. This negative experience, in turn, reinforces a person's pre-existing negative attitude toward diabetes. From this perspective, the effect of negative thoughts towards their mood and behavior may be extremely helpful for patients with poorly controlled diabetes by challenging these beliefs with more constructive and self-helping cognitions. This could result in reduced negative feelings and more adaptive coping. Such thoughts become dysfunctional when invalidated assumptions are made (e.g., "I'll lose my eyesight no matter what I do."), or when exaggeration takes place (e.g., "I can never do anything pleasant due to my diabetes."). Patients can benefit from looking critically at negative thoughts that are overwhelming and paralyzing, and then replacing them with cognitions that are more positive. A good example is Albert Ellis, the founder of REBT and a diabetes patient himself, who experienced a few problems in adjusting to the demands of the diabetes treatment regimen. The patients and the therapist could agree that whenever one thinks thoughts that are "bad about one self" or "like a bad person," these thoughts should be written on the sheet. Both the patient and the therapist should check the validity of that thought by examining the evidence, which supports the accuracy or contradiction of the thought. Then the thought patterns that lead to the person saying this to himself should be identified.

This will serve as the learning process of the thought wherein a person acquires the ability to speak to himself in a more appropriate way to control certain behaviors. In this process, internal verbalizations, which arise from assumptions that constitute their belief system regarding this thought, need to be identified.

Self-verbalizations

This part of the session should be accomplished by utilizing Socratic questioning. The therapist should challenge the patient's thoughts through logical persuasion. Personal worth and control over their illness should be highlighted. However, the participant should verbalize their feelings about the diagnosis of diabetes by discussing the feelings and recognizing the impact they might have on the control of diabetes. Myths that surround the reasons for contracting diabetes should also be dispelled. These myths often include the participants thinking that they might have done something bad, or they ate too much sugar. Asking from participants what they feel of their diagnosis and identifying what life style changes are most difficult to incorporate into their lives are the hardest parts to manage.

The chart could be used as follows:

Core-belief → Intermediate-beliefs → Situation → Automatic-thought → Reactions/Emotions/
Behaviors/Physiology.

Part 3

This part will use a relaxation technique and guided imagery. Relaxation techniques are one of the proven helpful methods for people to maintain control even when out of the group. The group can perform this part together. The entire exercise is less than ten minutes. The participants are requested to keep their eyes closed. If they feel uncomfortable, they can opt to leave them open. "Focuses on what I am saying" takes them through the relaxation series. When the patient's eyes are closed, specific muscles from head to toes can be triggered. The therapist can speak soothingly and take them through several breaths counting from 10 backwards. An image of a big, strong, and healthy horse is encouraged. After pausing for a few seconds, the relaxation technique can be ended. While relaxed, the six affirmations are read as a group. The patients will affirm what work has been done. A series of affirmations are:

- a. We accept that we are worthy because we are alive (we are worthy of receiving help);
- b. We have considerable control over our diabetes;
- c. We can learn to live more comfortably with diabetes;
- d. We can learn to be our own therapists with the help of homework;
- e. We can control our thoughts about our illness by replacing them with better ones; and
- f. We can control our behavior and feel better about our situation.

Part 4

This part usually lasts for five minutes. The therapist will summarize what was done during the session and the participants will have the chance to give feedback. Therefore, the patients got their first general picture of the structure of the group therapy sessions and each of the four parts was performed in detail. In Part 1, participants greeted and shared notes and BG sheets, introduced themselves, talked about taking daily notes of their food, and discussed how they felt at that time. Each session, the therapist collected the sheets, and a new sheet was given to them. The therapist also discussed how their BG sheets should be brought daily for comparison. In Part 2, sharing of thoughts regarding progress in the previous week and thoughts which are problems in the "here and now," making a group decision regarding the thoughts on which to concentrate on and deal with during that session (1–2 thoughts), the participants shared their thought (according what was written together) and a decision was decided on (according to that chart). In Part 3, relaxation techniques were used, involving the use of imagery, and the reading of affirmations, such as, "you close your eyes and I take you through a relaxation technique and guide you to an image of a strong and healthy horse." In part 4, a summary is given and participants are encouraged to provide feedback based on their opinions (e.g., "How did you feel about what we did today?"). The homework for the coming week is also set if none was given in this session, the therapist can encourage them again next week. The therapist ends the session by saying, "Good luck and nice work today."

All sessions will follow the same structure except the last session of the therapy. The therapist will study how this group has benefitted from the therapy, and the patient's feedback will be taken into consideration. The last section involves the performance of the assignment (i.e., "You are strongly encouraged to continue taking of what you are eating and feeling after the whole day." and "I've recorded all of your BG sheets and the level of blood sugar in all of you, and I hope you continue this structure for as long as you need to feel better.") At the end of the session, the therapist will provide the entire certificate of the patient for completing the sessions.

DISCUSSION

The present method will demonstrate that a group CBT can be an effective technique for better control over the diabetes psychological complication (e.g. stress, anxiety), which can affect the level of glycemia. Aging and lifestyle changes are major contributors for the increase in type 2 diabetes cases. In developing countries most people with type 2 diabetes are of working age, between 40 and 60 years (Shaw, Sicree, & Zimmet, 2010). In 1970, only 5.2% of the Malaysian population was over 65 years old. However, the percentage is projected to reach 9.5% by the year 2020. Adults at this stage of the life may undergo problems such as financial difficulties due to occupational status, physical complications such as poor control risk factors, and psychological complications like, depression or anxiety. Therefore, increased number of cases implies that Malaysian society will have a considerable number of diabetics who will have emotional related problems. These problems can impair the way diabetics' function within their homes, the workplace, and society. Diabetics are a part of society, and their psychological health is important. With the help of an investigation of how psychological factors can affect level of blood sugar, appropriate diagnosis and treatment methods can be discovered for the benefit of Malaysian diabetes people.

As explained before education is one of the fundamental parts of CBT, which emphasized in presented method

of treatment. In a qualitative research which had done by Al-Qaza et al. (2011) at Universiti Sains Malaysia, mentioned only few of patients knew whether their diabetes was type 1 or 2, and participants awareness about the seriousness of their disease was not good enough to stick firmly to the treatment regimen (Al-Qazaz, Hassali, Shafie, Syed Sulaiman, & Sundram, 2011). Education on all of the treatment components for diabetics can be delivered within the context of psycho-educational groups. Groups, which include information on diabetes, healthy lifestyle habits, nutrition, medication compliance, and self-esteem, cognitive restructuring for depression, and etc. will improve not only knowledge of diabetes, but also the chances that diabetics will practice effective adherence.

Salmiah (2010), demonstrated depression, anxiety, and stress were highly correlated each other among diabetes population of Malaysia. Another study conducted by Kaur et al. (2013) on a huge number of diabetics (n = 2508) revealed that the prevalence of depression, anxiety and stress symptoms was high among type 2 diabetics in Malaysia and they recommended for screening of mental illnesses in diabetes population (Kaur, Tee, Ariaratnam, Krishnapillai, & China, 2013; MA, 2010). As a result, psychological complications are often a co-morbid diagnosis for diabetics, thus CBT program can be effective by identifying and modifying the clients' maladaptive thought process and problematic behaviors through cognitive restructuring and behavioral technique to achieve adequate changes.

The addition of homework as an essential part of CBT will increase concern over the foods, level of blood sugar, taking medication punctually, and changing behavior following changes in emotions. The forgetting medication was one of the factors that noticed in Al-Qaza's research at Universiti Sains Malaysia. By practicing to record the daily activities, can help the participants to prevent them to forget their medication. The regimen of diabetic care will consider as daily monitoring (food diary) may also influence the patients to eat more appropriate foods to achieve the desire blood sugar by day so they will be able to review their entire day activities. The routine diabetic regimen may have an influence on the decrease in the HbA1c, if one can control it continuously. In part, the regimen includes medication (as standard treatment), education gained through diabetic management, nutritional education, learning more effectively some skills that can help the participants to overcome with daily demands of diabetes, and understanding emotion and behaviors which are related to those emotions. Therefore, by implying this technique on diabetics, this study will attempt to shed further light on the effectiveness of group CBT as the complimentary methods to regular medication treatment for better control of blood sugar, and bridge the gape in the investigation into the effectiveness of group CBT by linking psychological facts to diabetes.

CONCLUSION

The number of diabetics in Malaysia is in alarming rate and control of diabetes is affected by psychological factors but still there is no specific psychological intervention for diabetics in Malaysia. Rate of depression, stress, and anxiety are high among diabetics in Malaysia. Therefore a form of psychotherapy that integrates theories of cognition and learning with treatment techniques derived from cognitive therapy and behavior therapy can be an effective method to improve control of glycemia level. This study provides a clear structure of group CBT for diabetes people. The therapy will integrate elements of several effective therapies (e.g cognitive restructuring technique, and problem solving) in structured protocols. This therapy will use to improve the control of blood sugar level in diabetes people type 2.

REFERENCES

- Al-Haddad, M. S. d. M. (2008). Economic, Social And Clinical Evaluations Of Diabetes Self Management Program At Universiti Sains Malaysia Health Center: Comparison Between Structured And Less Structured Educational Programs [RC660. H126 2008 f rb]. Universiti Sains Malaysia.
- Al-Qazaz, H. K., Hassali, M. A., Shafie, A. A., Syed Sulaiman, S. A., & Sundram, S. (2011). Perception and knowledge of patients with type 2 diabetes in Malaysia about their disease and medication: A qualitative study. *Research in Social and Administrative Pharmacy*, 7(2), 180-191.
- Alberti, G., Zimmet, P., Shaw, J., Bloomgarden, Z., Kaufman, F., & Silink, M. (2004). Type 2 Diabetes in the Young: The Evolving Epidemic The International Diabetes Federation Consensus Workshop. *Diabetes care*, 27(7), 1798-1811.
- Amos, A. F., McCarty, D. J., & Zimmet, P. (1997). The rising global burden of diabetes and its complications: estimates and projections to the year 2010. *Diabetic medicine*, 14(S5), S7-S85.
- Cockram, C. S., Woo, J., Lau, E., Chan, J., Chan, A., Lau, J., Donnan, S. (1993). The prevalence of diabetes mellitus and impaired glucose tolerance among Hong Kong Chinese adults of working age. *Diabetes research and clinical practice*, 21(1), 67-73.
- Debono, M., & Cachia, E. (2007). The impact of diabetes on psychological well being and quality of life. The role

- of patient education. *Psychology, Health and Medicine*, 12(5), 545-555.
- Der Ven, N., Hogenelst, M., Tromp-Wever, A., Twisk, J., Der Ploeg, H., Heine, R., & Snoek, F. (2005). Short-term effects of cognitive behavioural group training (CBGT) in adult Type 1 diabetes patients in prolonged poor glycaemic control. A randomized controlled trial. *Diabetic Medicine*, 22(11), 1619-1623.
- DeVries, J., Snoek, F., & Heine, R. (2004). Persistent poor glycaemic control in adult Type 1 diabetes. A closer look at the problem. *Diabetic Medicine*, 21(12), 1263-1268.
- Edmunds, S., Roche, D., Stratton, G., Wallymahmed, K., & Glenn, S. M. (2007). Physical activity and psychological well-being in children with Type 1 diabetes. *Psychology, health & medicine*, 12(3), 353-363.
- Forlani, G., Lorusso, C., Moscatiello, S., Ridolfi, V., Melchionda, N., Di Domizio, S., & Marchesini, G. (2009). Are behavioural approaches feasible and effective in the treatment of type 2 diabetes? A propensity score analysis vs. prescriptive diet. *Nutrition, Metabolism and Cardiovascular Diseases*, 19(5), 313-320.
- Goldney, R. D., Phillips, P. J., Fisher, L. J., & Wilson, D. H. (2004). Diabetes, Depression, and Quality of Life A population study. *Diabetes Care*, 27(5), 1066-1070.
- Gonzalez, J. S., & McCarl, L. A. (2010). Cognitive behavioral therapy for adherence and depression (CBT-AD) in type 2 diabetes. *Journal of cognitive psychotherapy*, 24(4), 329.
- Karlsen, B., Idsoe, T., Dirdal, I., Rokne Hanestad, B., & Bru, E. (2004). Effects of a group-based counselling programme on diabetes-related stress, coping, psychological well-being and metabolic control in adults with type 1 or type 2 diabetes. *Patient Education and Counseling*, 53(3), 299-308.
- Kaur, G., Tee, G. H., Ariaratnam, S., Krishnapillai, A. S., & China, K. (2013). Depression, anxiety and stress symptoms among diabetics in Malaysia: a cross sectional study in an urban primary care setting. *BMC family practice*, 14(1), 69.
- Kim, S., Lee, J., Lee, J., Na, J., Han, J., Yoon, D., Choi, K. (2006). Prevalence of Diabetes and Impaired Fasting Glucose in Korea Korean National Health and Nutrition Survey 2001. *Diabetes Care*, 29(2), 226-231.
- King, H., Aubert, R. E., & Herman, W. H. (1998). Global burden of diabetes, 1995–2025: prevalence, numerical estimates, and projections. *Diabetes care*, 21(9), 1414-1431.
- Kramer, J. R., Ledolter, J., Manos, G. N., & Bayless, M. L. (2000). Stress and metabolic control in diabetes mellitus: Methodological issues and an illustrative analysis. *Annals of Behavioral Medicine*, 22(1), 17-28.
- Letchuman, G., Wan Nazaimoon, W., Wan Mohamad, W., Chandran, L., Tee, G., Jamaiyah, H., Ahmad Faudzi, Y. (2010). Prevalence of diabetes in the Malaysian national health morbidity survey III 2006. *Med J Malaysia*, 65(3), 180-186.
- Lu, F. H., Yang, Y. C., Wu, J. S., Wu, C. H., & Chang, C. J. (1998). A population-based study of the prevalence and associated factors of diabetes mellitus in southern Taiwan. *Diabetic medicine*, 15(7), 564-572.
- MA, S. (2010). Validation and psychometric properties of Bahasa Malaysia version of the Depression Anxiety and Stress Scales (DASS) among diabetic patients. *Malaysian Journal of Psychiatry*, 18(2).
- Mafauzy, M. (2006a). Diabetes control and complications in public hospitals in Malaysia. *Medical Journal of Malaysia*, 61(4), 477.
- Mafauzy, M. (2006b). Diabetes mellitus in Malaysia. *Medical Journal of Malaysia*, 61(4), 397.
- Shaw, J., Sicree, R., & Zimmet, P. (2010). Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes research and clinical practice*, 87(1), 4-14.
- Takahashi, Y., Noda, M., Tsugane, S., Kuzuya, T., Ito, C., & Kadowaki, T. (2000). Prevalence of diabetes estimated by plasma glucose criteria combined with standardized measurement of HbA1c among health checkup participants on Miyako Island, Japan. *Diabetes Care*, 23(8), 1092-1096.
- Wild, S., Roglic, G., Green, A., Sicree, R., & King, H. (2004). Global prevalence of diabetes estimates for the year 2000 and projections for 2030. *Diabetes care*, 27(5), 1047-1053.
- Yun, L. S., Hassan, Y., Aziz, N. A., Awaisu, A., & Ghazali, R. (2007). A comparison of knowledge of diabetes mellitus between patients with diabetes and healthy adults: a survey from north Malaysia. *Patient education and counseling*, 69(1-3), 47.
- Zaini, A. (2000). Where is Malaysia in the midst of the Asian epidemic of diabetes mellitus? *Diabetes research and clinical practice*, 50, S23-S28.