

Perceived Stress, Coping Self-Efficacy and Illness Perception in Type 1 Diabetics

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Declaration

Declaration

'I declare that this thesis that I have submitted to Dublin Business School for the award of BA (Hons) Psychology is the result of my own investigations, except where otherwise stated, where it is clearly acknowledged by references. Furthermore, this work has not been submitted for any other degree.'

Signed: Ciara Lacey

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Firstly, I would like to thank the participants who took the time to assist me in my research. I would also like to thank my friends and family for being so supportive and understanding throughout this stressful time. A special thank you to my parents for their financial support over the past three years. Particularly, my mother Susan, for her endless encouragement, positivity and emotional support. Finally, a sincere thank you to my supervisor, Dr. Pauline Hyland for her guidance, professionalism and patience throughout my time in DBS which has helped me in more ways than I can describe, and for that, I will be forever grateful.

Abstract

This study examined perceived stress, coping self-efficacy and illness perception in type 1 diabetics. The role of training and the length of time the patient has been living with type 1 diabetes were also examined in separate analyses. A total of 98 adults living with the autoimmune disease took part in a survey that was created by Google Forms. The participants were sourced using an online support group for patients living with the illness. The analyses showed that the patient's illness perception significantly predicted their stress levels and coping self-efficacy. The length of time the patient has been living with type 1 diabetes significantly predicted their stress levels but did not significantly predict their coping self-efficacy. There was no statistical significance on the role of training in relation to the patient's illness perception, coping self-efficacy and stress. The importance of patient adherence and social support are discussed throughout.

Introduction

Overview

Type 1 Diabetes is a lifelong autoimmune disorder in which the pancreas produces little or no insulin due to the beta cells, also known as insulin making cells being destroyed resulting in hyperglycaemia (Van Belle, Coppieters, & Von Herrath, 2011). It involves various lifestyle changes such as monitoring blood glucose and administering insulin that requires patients to develop a positive attitude to improve blood sugar levels and learning to self-care will promote long-term benefits (Freeborn, Dyches, O Roper, & Mandleco, 2013). At present type 1 diabetes cannot be cured (Atkinson, Eisenbarth, & Michels, 2014). Patients with the autoimmune disorder are required to use both a long-acting insulin and a short-acting insulin which is usually injected before eating to match the amount of carbohydrate being consumed. They may also be given the option of wearing an insulin pump which is programmed to deliver specific amounts of insulin in a continuous dose and also during mealtime extra insulin will be delivered (Vanstone, Rewegan, Brundisini, Dejean, & Giacomini, 2015). The amount administered to the patient all depends on the individual's insulin requirements. The autoimmune condition is usually diagnosed in childhood and in Ireland approximately 10-15% of the population are living with type 1 diabetes. According to the Irish Paediatric Diabetes Audit (2012) there are roughly 2,750 people under the age of sixteen living with the autoimmune disease.

The aim of the current research is to look at how the length of time the patient has been living with type 1 diabetes relates to their stress levels and coping self-efficacy. Due to the limited review on the role of the length of time the patient has been living with the autoimmune disease and their coping self-efficacy, the current research will extend this knowledge. The role of training will also be examined, comparing those that have received

training to help manage their diabetes to those that have not received training in relation to their illness perception, coping self-efficacy and stress. Finally, the present study will also look at the role illness perception has on stress levels and coping self-efficacy in type 1 diabetics.

Stress and Management of Type 1 Diabetes

Significantly high levels of stress, whether physical or mental stress can be problematic for people with diabetes as it has been proven to cause changes in blood sugar levels. The stress hormone known as cortisol is responsible for increasing the amount of sugar in the bloodstream. Prolonged stress may result in patients neglecting their diabetes care, which in turn can lead to complications (Rasmussen, Ward, Jenkins, King, & Dunning, 2011). Ortiz and Myers (2014) carried out a study to examine the association between psychological stress and metabolic control of adolescents with type 1 diabetes. Various psychological stress domains were used such as emotional burden, regimen-related distress, physician-related distress and diabetes-related interpersonal distress. A total of 20 adolescents living with the autoimmune disease took part in the study. Using the Polonsky' Diabetes Distress Scale a stress self-report was gathered as well as completing three HbA1c determinations (Ortiz & Myers, 2014). Growth curve modelling allowed for several analyses to be carried out. The first model consisted of HbA1c measures, the time term and several covariates, for example, age, the length of time the patient has been living with type 1 diabetes, sex and physical activity. The results showed that HbA1c levels were associated with a negative linear trend. In models where the stress domains were added, high levels of emotional burden and regimen related-distress were associated with higher HbA1c levels (Ortiz & Myers, 2014). In terms of diabetes-related interpersonal distress and HbA1c levels, a marginal association was established. These results suggested that psychological stress factors have a significant impact on metabolic control in adolescents with type 1 diabetes and

therefore, it is necessary to take into consideration. The length of time the patient has been living with type 1 diabetes in relation to their stress levels will also be examined in the present study.

Previous research by Baucom et al. (2015) involving 175 late adolescents with type 1 diabetes explored whether depressive symptoms were related to greater perceived daily stress whilst moderating the association between stress severity and poorer daily adherence in these patients. During a baseline laboratory assessment, the participants were required to carry out measures of depressive symptoms and glycaemic control which was followed by a fourteen-day daily diary whereby the patients were asked to rate the severity of both general and diabetes-specific stressful events, along with adherence to their diabetes regimen. The results showed that those with poorer average daily adherence, poorer glycaemic control and more severe daily stress suffered from more depressive symptoms. Poorer adherence was identified on days where patients experienced more diabetes-specific stressful events as opposed to general stressful events. This link was then moderated due to an interaction between depressive symptoms and the mean level of diabetes-specific stressful events encountered over the two-week diary (Baucom et al., 2015). Researchers concluded that examining stress in late adolescents with type 1 diabetes is paramount due to its role on depression.

Research examining perceived stress and its relationship to metabolic control was carried out in 204 youth with type 1 diabetes (Berlin, Rabideau, & Hains, 2012). Empirically derived patterns of stress associated with type 1 diabetes among youth living with the autoimmune disease were established. The researchers also determined if and how these patterns are connected to overall perceived diabetes-related stress and metabolic control which was assessed by obtaining the patients HbA1c levels (Berlin et al., 2012). The diabetes stress questionnaire was completed by all participants to measure their levels of perceived stress. Empirically derived patterns of perceived diabetes-related stress were established by

completing latent profile analyses. As a result, three profiles of perceived stress had emerged. These included low stress, interpersonal/peer and family stress. Greater overall stress was identified in the interpersonal/peer and family stress groups in comparison to the low stress group. In terms of HbA1c levels, only the family stress group's values were significantly higher than either the low stress or interpersonal/peer groups (Berlin et al., 2012). These findings suggested that although a global measure of stress may not accurately account for the relationship between perceived stress and metabolic control, it is clear that family stress rather than interpersonal/peer stress appears to be a key factor associated with poor metabolic control.

A study involving children and young adults living with type 1 diabetes was designed to look at the obstacles they encounter from their own perspectives (Freeborn et al., 2013). In doing so, it would become easier to understand the difficulties they face as well as to help them in overcoming these challenges. A total of sixteen children and young adults were involved in the study. Six focus groups were created for the participants to attend which took place over a four-month period. A qualitative approach was used to develop themes from the interviews. Three themes had emerged which consisted of low blood-sugars, feeling different and/or alone and self-care activities. As a result of these findings, it was clear that young people living with type 1 diabetes face many challenges in managing their disease. The researchers concluded that to improve health and reduce the risk of complications these challenges need to be addressed (Freeborn et al., 2013). Due to the importance of addressing these challenges, the current study will look at the role of training in relation to the patients' perceived stress. This will also be examined with regard to the patients' coping self-efficacy.

Coping Self-Efficacy

One of the main realisations for a person living with type 1 diabetes is that it will accompany them for the rest of their lives. Therefore, it is essential for those with this chronic illness to develop effective coping strategies which in turn will lead to an improvement in their overall management of the condition (Jaser & White, 2010). Research investigating adult self-classification in patients with type 1 diabetes was examined in relation to illness coping and glycaemic control (Luyckx, Moons, & Weets, 2011). In total there were 194 patients involved in the study ranging from the age of 18-30. Two hundred and eighty-seven control individuals also took part. To evaluate adult self-classification a single item was used, the Diabetes Coping Measure determined illness coping and HbA1c levels were obtained to assess glycaemic control. The results indicated that in comparison to the control individuals, more patients with type 1 diabetes classified themselves as adults (Luyckx et al., 2011). A positive correlation was evident between adult self-classification and glycaemic control. Structural equation modelling demonstrated that coping mediated the relationship between adult self-classification and glycaemic control. A conclusion was drawn that adult self-classification functions as a resource for glycaemic control through its connection with particular coping strategies (Luyckx et al., 2011).

A qualitative study by Rasmussen et al. (2011) was designed to establish the life transitions that may be likely to have an effect on young adults' management of type 1 diabetes. Furthermore, their coping strategies during these transitions were examined (Rasmussen et al., 2011). Twenty young adults with type 1 diabetes were interviewed for the study and the overall outcome showed that participants had established life development during adolescence, being in a new relationship and motherhood as the significant transition groups. Diabetes related transitions included diagnosis, beginning insulin pump treatment and developing diabetes complications. Talking to others with diabetes, putting diabetes into

perspective and using previous experiences to help them manage their diabetes were mentioned by the participants as effective coping strategies (Rasmussen et al., 2011). For the purpose of the current research, a quantitative design will be used to obtain results which in comparison to a qualitative design allow for the individual's participation to be both anonymous and confidential. Therefore, the participant is more likely to disclose truthful information which then leads to a more accurate result overall.

Research examining the relationship between active coping and withdrawal as well as psychological symptoms and glycaemic control was carried out in 149 adolescents with type 1 diabetes (Luyckx, Seiffge-Krenke, & Hampson, 2010). The participants were involved in a longitudinal study that took place over four years. Questionnaires measuring coping and psychological symptoms were given to the patients to complete at home whilst also obtaining their HbA1c levels from their physicians. Results showed that lower HbA1c levels were associated with active coping and those with higher HbA1c levels as well as higher psychological symptoms displayed signs of avoidant coping across time (Luyckx et al., 2010). These findings revealed that coping with everyday stress, psychological symptoms and glycaemic control are interrelated over a period of time. In order to enhance clinical care in adolescents with the autoimmune disease it is essential not only to monitor glycaemic control but also to take the coping strategies and psychological symptoms of these patients into consideration. Due to the longitudinal nature of the data, this provides a more detailed and in depth understanding of the area and highlights the need for further research with regard to coping.

Research examining coping and resilience in adolescents with type 1 diabetes made use of a developmentally sensitive coping measure to investigate how particular coping strategies can influence resilience, for example, quality of life, competence and metabolic control in these patients (Jaser & White, 2010). The study was conducted on thirty 10-16-

year-old adolescents living with the autoimmune disease. Both participants and their mothers were required to fill out questionnaires in relation to the adolescents' use of coping strategies, their competence and quality of life. Patients HbA1c levels were also retrieved. The findings showed that those with a greater use of coping strategies such as problem solving, emotional expression, acceptance and distraction displayed higher competence scores, better quality of life and better metabolic control. Lower competence and poorer metabolic control were associated with the use of disengagement coping strategies, for example withdrawal and denial (Jaser & White, 2010). This suggested that it is important for both researchers and clinicians to make use of developmentally sensitive coping measures to decide on the most practical coping strategies for adolescents with type 1 diabetes. The study mentioned above suggests that effective coping strategies are associated with a better quality of life for type 1 diabetics and as a result, the present study will investigate the relationship between illness perception and coping self-efficacy.

Illness Perception

When living with a chronic illness such as type 1 diabetes patients may become overwhelmed in managing their condition, particularly those who are newly diagnosed. Therefore, it is essential for patients to gain a greater understanding of their disease by developing relationships with healthcare professionals (Scholes et al., 2012). This will encourage those living with the autoimmune disease to establish a positive attitude which in turn will reduce the risk of complications. A study involving three hundred young adults with type 1 diabetes were required to complete five questionnaires one of which included the Brief Illness Perception Questionnaire. The purpose of this study was to design a model of adjustment to type 1 diabetes. Illness perception was found to be affected by secure and avoidant attachment styles. Regression effects of illness perception on adjustment were

positive which led to the conclusion that positive illness perception results in an improved adjustment to diabetes (Bazzazian & Besharat, 2011).

Research investigating young people's perspectives of living with type 1 diabetes was designed to see whether their levels of metabolic control have an impact on their perceptions of their illness (Scholes et al., 2012). The qualitative study was carried out using 14 participants ranging from the age of 11 to 22. By conducting interviews with the patients about their perceptions of living with type 1 diabetes, this allowed for the development of major themes. These themes consisted of reactions to others, knowledge about type 1 diabetes and believed healthcare providers used authoritarian interactions which were evident in those with both high and low levels of metabolic control. However, it was clear that those with high metabolic control thought that their diabetes would be cured, upon diagnosis they had negative initial responses, they did not receive adequate support in managing their diabetes and they failed to engage in self-care activities. On the other hand, patients with low metabolic control realised that their illness would not be cured, there were no signs of negative responses upon diagnosis, they obtained parental support in managing their diabetes and were conscientious in relation to self-care activities (Scholes et al., 2012). These findings suggested that it is important for healthcare professionals to provide young type 1 diabetic patients with the information necessary to successfully manage their illness and in doing so, this will allow for the development of a positive relationship with healthcare professionals. For the purpose of the current study, the role of training on illness perception will be examined.

A study designed to look at the importance of adolescents' perceptions on diabetes management and control was conducted on two hundred and sixty-two adolescents with type 1 diabetes (Vesco et al., 2010). By retrieving information on the patients' blood glucose monitoring frequency and their glycaemic control as well as having the participants and their

caregivers complete the Diabetes Family Responsibility Questionnaire (DFRQ), researchers were able to establish any significant relationships between the two. Adolescent perception of greater responsibility sharing with caregivers on direct management tasks was significantly related to higher blood glucose monitoring frequency (Vesco et al., 2010). A conclusion was drawn that patients who observe greater caregiver responsibility, take part in better diabetes management. These findings demonstrate the importance of the role of caregivers for adolescents living with type 1 diabetes.

Previous research consisting of 20 adolescents with type 1 diabetes as well as 27 of their parents examined the experiences of living with the autoimmune disease from their perspective (Spencer, Cooper, & Milton, 2012). A qualitative approach was used which allowed for in-depth interviews to be conducted with both the adolescents and their parents. The results showed that living with type 1 diabetes in adolescence was characterized by three specific stages. These included adjusting to the diagnosis, learning to live with type 1 diabetes and becoming independent (Spencer et al., 2012). Self-management skills and independence were developed in adolescents as a result of experiential learning. Adolescents were given the opportunity to learn through trial and error due to both parents and healthcare professionals providing them with the environments to do so. They were also responsible for the support, feedback and discussion necessary to facilitate such learning (Spencer et al., 2012). A conclusion was drawn that experiential learning is paramount for adolescents to become independent in type 1 diabetes self-management. It is crucial that parents and health professionals recognise the significant role they play in this process and are equipped with the skills necessary to support adolescents in this way.

Rationale

The present study involves patients with type 1 diabetes to complete questionnaires that assess their perceived stress levels, coping self-efficacy and illness perception. Perceived stress and coping self-efficacy will be compared against the length of time the patient has been living with the autoimmune disease to determine how these variables can change with time. An analysis of the scores of those who received the training on illness perception, perceived stress and coping self-efficacy will be carried out to look at how the patient's perception of their illness can influence these measures. The relationship between illness perception and coping self-efficacy will be examined as well as the impact illness perception has on the individual's stress levels.

Hypotheses

Hypothesis 1: It is hypothesised that the longer the patient has been living with type 1 diabetes the lower their stress levels will be.

Hypothesis 2: The longer the patient has been living with type 1 diabetes the greater the coping self-efficacy.

Hypothesis 3: The patient's illness perception will significantly predict their stress levels.

Hypothesis 4: There will be a significant relationship between illness perception and coping self-efficacy.

Hypothesis 5: Those who received the training will score lower on illness perception.

Hypothesis 6: Those who received the training will score lower on perceived stress.

Hypothesis 7: Those who received the training will score higher on coping self-efficacy.

Methodology

Participants

The current study consisted of 98 adults with type 1 diabetes, which included 80 (81.6%) females and 18 (18.4%) males. The participants were sourced using an online support group for patients living with the autoimmune disease. Purposive sampling was used as well as snowball sampling due to the survey being posted online which resulted in the members of the support group sharing the link to their contacts. Those who took part in the survey did so on a voluntary basis while remaining anonymous. The participants were not presented with incentives upon completion of the survey. The inclusion criteria consisted of those over the age of eighteen with type 1 diabetes and as a result, those under the age of eighteen as well as individuals who do not have type 1 diabetes were excluded from taking part in the study. In terms of the Berger Carbohydrate Counting Course, 63.9% of the sample had not completed this particular course and had also never received any additional training. However, 36.1% of the participants had taken part in this course whilst also receiving additional training.

Design

The present study consists of a correlational design for the first four hypotheses as they contain criterion and predictor variables. However, for the final three hypotheses the design is cross-sectional as they consist of independent and dependent variables. The questionnaire used to collect the data is quantitative by nature. The independent variable is the training whilst the dependent variables are illness perception, perceived stress and coping self-efficacy. The criterion variables for the first four hypotheses are perceived stress and coping self-efficacy and the predictor variables include the length of time the participant has been living with the autoimmune disease and illness perception. The first hypothesis of the

current research states that the longer the patient has been living with type 1 diabetes the lower their stress levels will be. The second hypothesis predicts that the longer the patient has been living with type 1 diabetes the greater the coping self-efficacy. Illness perception and its impact on the patients' stress levels are examined in the third hypothesis. The fourth hypothesis looks at the relationship between illness perception and coping self-efficacy. The final three hypotheses suggest that completion of the training will firstly, result in lower illness perception scores, secondly, will cause patients to score lower on perceived stress and finally, coping self-efficacy levels will be higher.

Materials

The survey for the following research was created by "Google Forms". The participants were presented with an information sheet at the beginning of the survey to inform them of the nature of the research and also to make clear that participation is completely anonymous and confidential. Contact details for support services were made available to the participant on the final page. Should the participant require any further information about the research, contact details for the researcher and supervisor were provided at the end of the information sheet and also on the debrief sheet. Those who took part in the research were informed that by completing and submitting the questionnaire they are consenting to participate in the study. The first page of the survey provided the participants with demographic questions including age, gender, the number of years they have been living with type 1 diabetes, the Berger Carbohydrate Counting Course and additional training. Both age and the number of years the individual has been living with type 1 diabetes were put forward as open-ended questions. Gender was split into four different options, male, female, other and no response. Completion of the Berger Carbohydrate Counting Course as well as receiving additional training were divided into two options, yes or no. Finally, if the patient had taken part in additional training, they were asked to give the name of the particular course. The

final section of the survey consisted of three questionnaires; The Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), The Coping Self-Efficacy Scale (Chesney, Folkman, & Taylor, 2006) and The Brief Illness Perception Questionnaire (Broadbent, Main, Petrie, & Weinman, 2005).

The Perceived Stress Scale – The following scale was designed to assess the psychological stress associated with sex, age, education, employment status, income etc. There are four items altogether with items two and three being the positively stated items. All four items are summed across so that the scores can be retrieved as well as reverse coding the positive items, e.g. 0=4, 1=3, 2=2, etc. E.g. ‘In the last month, how often have you been able to control irritations in your life?’. (See Appendix C). The participants were informed that the following questionnaire would require them to indicate how often they felt or thought a certain way in the last month by choosing from five different options. These options range from ‘0=Never’ to ‘4=Very Often’. A study carried out in Greece was designed to examine the reliability and validity of the Perceived Stress Scale (PSS) (Alexopoulos et al., 2011). Cronbach’s Alpha was used to test for reliability. The results showed a value of .82 which would suggest that internal reliability is good.

The Coping Self-Efficacy Scale – This scale was created to evaluate one’s perceived ability to cope effectively with life challenges. In total, there are twenty-six items and to allow participants to state how uncertain or certain they are with the twenty-six items, a ten-point scale is used ranging from 0 (cannot do at all) to 10 (Certain can do). E.g. ‘Talk positively to yourself’, ‘Keep yourself from feeling lonely’. (See Appendix D). The participants were asked to state how confident or certain they are that they can do each one of the twenty-six items by using the ten-point scale. Previous research investigating the validity and reliability of the Coping Self-Efficacy Scale (Chesney, Neilands, Chambers, Taylor, & Folkman, 2006)

tested for reliability by using Cronbach's Alpha. The coefficient alpha ranged from .80 to .91 which suggested very good internal reliability.

The Brief Illness Perception Questionnaire – The following scale was set up to examine the cognitive and emotional representations of illness. It consists of eight items that are scored on a ten-point scale. The score is measured by reverse scoring items three, four and seven and then adding these to items one, two, five, six and eight. A higher score is associated with a more threatening view of the illness. E.g. 'How long do you think your diabetes will continue?' and 'How much do you experience symptoms from your diabetes?'. The following questionnaire was presented to participants by asking them to circle the number that best corresponds to their views. E.g. '0 = a very short time', '10 = forever' and '0 = no symptoms at all', '10 = many severe symptoms'. (See Appendix E). Giannousi, Manaras, Georgoulas and Samonis (2010) reported good internal reliability of this scale.

Procedure

The current research began by gaining approval from the ethics board at Dublin Business School. Using Google Forms, a survey was then created. An online support group for patients living with type 1 diabetes was used to share the link to the survey. Before clicking into the link, the potential participants were given a brief overview as to what the research involved. Those who clicked into the link were presented with an information sheet that provided the participants with details regarding the nature of the study. They were simply told that the purpose of carrying out the research was to look at stress levels, coping self-efficacy and illness perception in type 1 diabetics. The participants were informed that by completing and submitting the survey they are consenting to take part in the research. They were also notified that participation is entirely anonymous and confidential as well as being completely voluntary, therefore, they were not obliged to take part. Section one of the survey

consisted of five demographic questions and upon completion, the participants were brought to the final section involving the questionnaires. The time taken to complete the survey was roughly five to ten minutes. The debrief sheet consisted of details for support services should any of the questions cause minor negative feelings. These support services included Diabetes Ireland and Samaritans. After several weeks, the survey was taken offline, and Excel was used to download all responses. Once the excel sheet had been coded, all data was then transferred to IBM SPSS 25 where further coding and analysis took place.

Ethics

The current study was ethically approved by the ethics board at Dublin Business School. As per the DBS Ethical Guidelines for Research with Human Participants, all individuals were notified that taking part in the research is entirely voluntary and as a result, they are allowed to make the decision as to whether they would like to participate. They were also informed that participation is completely confidential as per the first principle of the PSI code of ethics which is to have respect for the rights and dignity of the person. A debrief sheet was included to provide information for support services should any of the questions cause the participants to become emotionally distressed. When doing so, the second issue that was examined when applying key ethical principles was taken into consideration which is the assessment of risks and benefits as per the DBS Ethical Guidelines for Research with Human Participants. There was no deception included in the present study and the participants did not receive incentives upon completion of the survey.

Results

Descriptive Statistics

To identify particular variables of the current sample, descriptive statistics were used within the analysis. These variables included gender, the Berger Carbohydrate Counting Course and additional training. As stated previously in the participant section, 80 females (81.6%) and 18 males (18.4%) with type 1 diabetes took part in the study giving a total of 98 participants. The Berger Carbohydrate Counting Course and additional training were completed by 35 (36.1%) of the participants while 62 (63.9%) had not taken part in this course and had also never received additional training. These statistics are displayed in the tables below.

Table 1: *Descriptive Statistics: Gender*

		Frequency	Valid Percent
Valid N	Male	18	18.4%
	Female	80	81.6%
	Total	98	

Table 2: *Descriptive Statistics: Berger Carbohydrate Counting Course and Additional Training*

		Frequency	Valid Percent
Valid N	Yes	35	36.1%
	No	62	63.9%
	Total	97	

To gain a better understanding of the categorical variables within the present study, specifically, the mean, standard deviation, minimum, maximum and the reliability of each measure, descriptive statistics were also used (*see table 3*).

Table 3: *Descriptive frequencies and reliability of Perceived Stress Scale, Coping Self-Efficacy Scale, Brief Illness Perception Questionnaire and years living with illness.*

	Mean	Std. Deviation	Minimum	Maximum	Reliability
Stress	21.30	7.12	4.00	36.00	.852
Coping	103.89	54.41	10.00	236.00	.977
Illness Perception	47.85	9.59	16.00	70.00	.722
Years with illness	18.01	14.82	.25	66.00	

The table above illustrates that the Perceived Stress Scale produced a mean score of 21.30, Std. deviation of 7.12 and a value of .852 for Cronbach's Alpha, suggesting good internal reliability. The Coping Self-Efficacy scale resulted in a mean score of 103.89, Std.

deviation of 54.41 and a value of .977 for reliability. A Cronbach's Alpha value of .7 and above demonstrates good internal reliability within a scale. Therefore, the Coping Self-Efficacy Scale in the current study suggests very good internal reliability. The Brief Illness Perception Questionnaire produced a mean score of 47.85, Std. deviation of 9.59 and a Cronbach's Alpha value of .722 which suggests good internal reliability. Finally, years living with the illness produced a mean score of 18.01 and a Std. deviation of 14.82.

Inferential Statistics

The analysis of the present study was carried out in relation to seven hypotheses. To do this, linear regressions and independent sample t-tests were used.

Hypothesis 1 – Results

Hypothesis 1: It is hypothesised that the longer the patient has been living with type 1 diabetes the lower their stress levels will be.

Using simple regression, it was found that the length of time the patient has been living with type 1 diabetes significantly predicted their stress levels ($F(1, 88) = 7.12, p = .009, R^2 = .06$) (Years living with illness, $\beta = -.27, p = .009, CI (95\%) -.24, -.03$). (*see figure 1*). This would suggest that the patients' stress levels are lower if they have been living with type 1 diabetes for a longer period of time. Therefore, the null hypothesis is rejected.

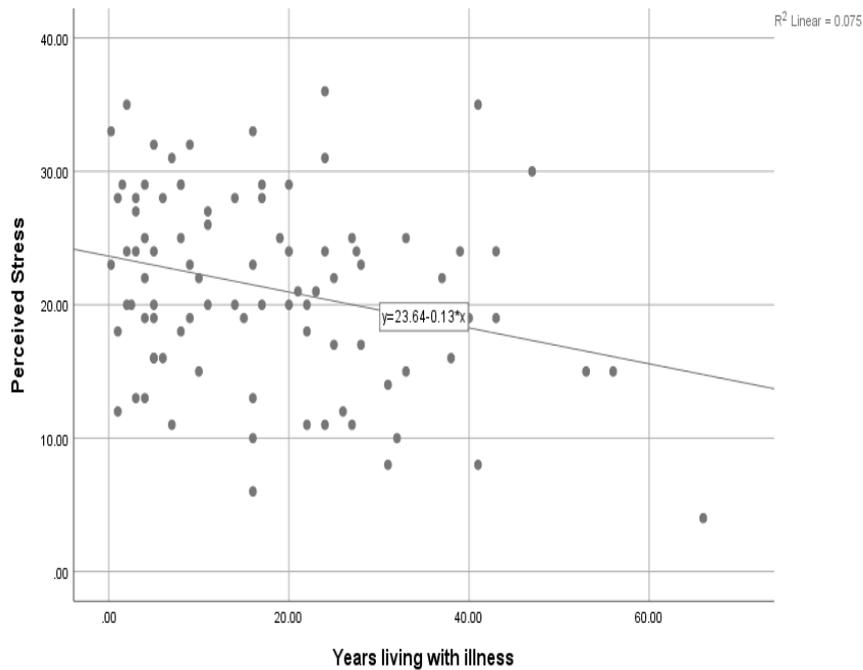


Figure 1 *Differences in perceived stress scores across years living with illness*

Hypothesis 2 – Results

Hypothesis 2: The longer the patient has been living with type 1 diabetes the greater the coping self-efficacy.

Using simple regression, it was found that the length of time the patient has been living with type 1 diabetes did not significantly predict their coping self-efficacy ($F(1, 79) = .44, p = .511, R^2 = -.01$) (Years living with illness, $\beta = .07, p = .511, CI (95\%) -.55, 1.10$). (see *figure 2*). This would suggest that the patients' levels of coping are only somewhat greater if they have been living with type 1 diabetes for a longer period of time. Therefore, the null hypothesis is accepted.

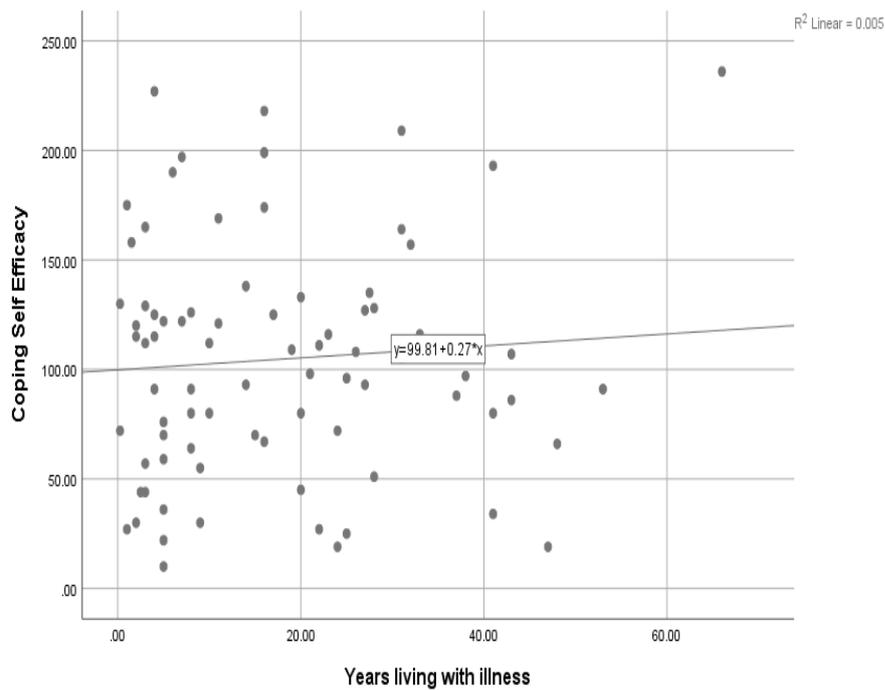


Figure 2 Differences in coping self-efficacy scores across years living with illness

Hypothesis 3 – Results

Hypothesis 3: The patient’s illness perception will significantly predict their stress levels.

Using simple regression, it was found that the patient’s illness perception significantly predicted their stress levels ($F(1, 84) = 40.10, p < .001, R^2 = .32$) (Illness perception, $\beta = .57, p < .001, CI (95\%) .28, .53$). (see figure 3). This would suggest that patients with higher scores on illness perception have higher stress levels. In other words, those with a more negative view of the illness have significantly higher levels of stress. Therefore, the null hypothesis is rejected.

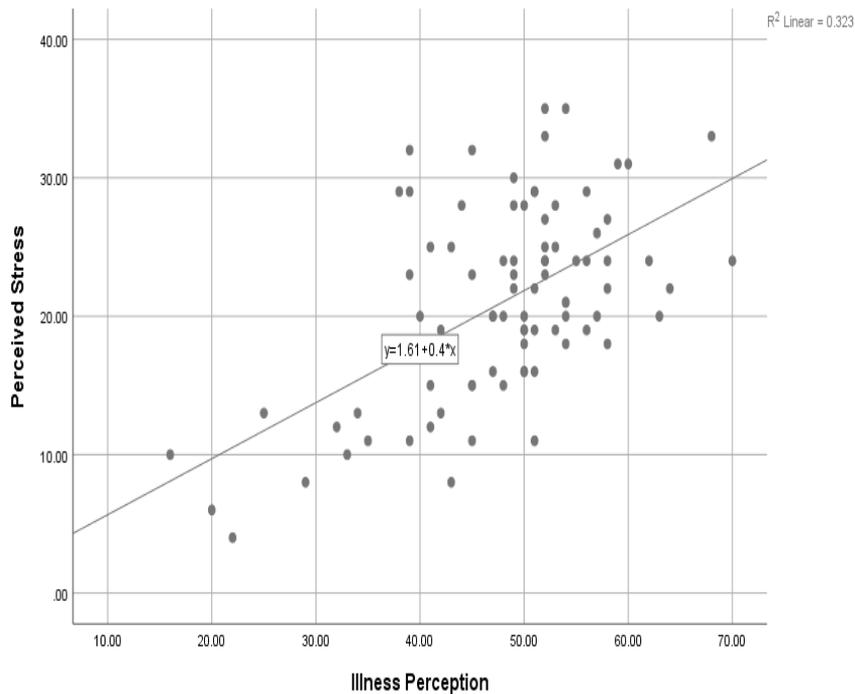


Figure 3 Differences in perceived stress scores across illness perception

Hypothesis 4 – Results

Hypothesis 4: There will be a significant relationship between illness perception and coping self-efficacy.

Using simple regression, it was found that the patient's illness perception significantly predicted their coping self-efficacy ($F(1, 76) = 18.22, p < .001, R^2 = .18$) (Illness perception, $\beta = -.44, p < .001, CI (95\%) -3.51, -1.28$). (see table 4). This would suggest that patients with higher scores on illness perception, that is those with a more negative view of the illness, have significantly lower levels of coping. Therefore, the null hypothesis is rejected.

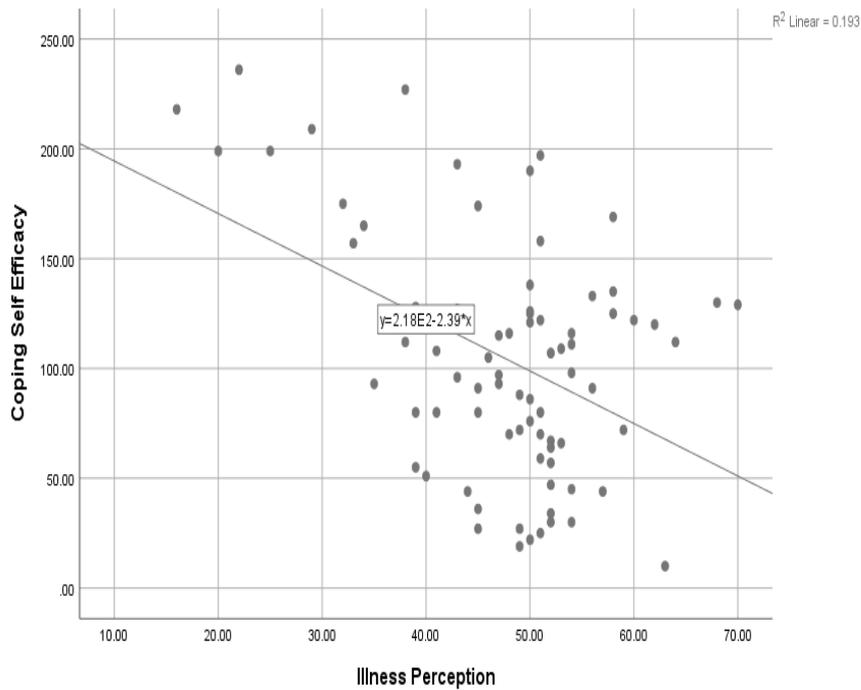


Figure 4 Differences in coping self-efficacy scores across illness perception

Hypothesis 5 – Results

Hypothesis 5: Those who received the training will score lower on illness perception.

An independent sample t-test found that there was no significant difference between illness perception of those who received the training ($M = 49.00$, $SD = 10.01$) and those who didn't ($M = 47.23$, $SD = 9.38$) ($t(90) = .84$, $p = .403$, $CI(95\%) -2.41 \rightarrow 5.94$). (see figure 5).

Therefore, the null is accepted. This would suggest that those who completed the Berger Carbohydrate Counting Course have a more negative view of the illness as they scored higher on illness perception in comparison to those who never received this training.

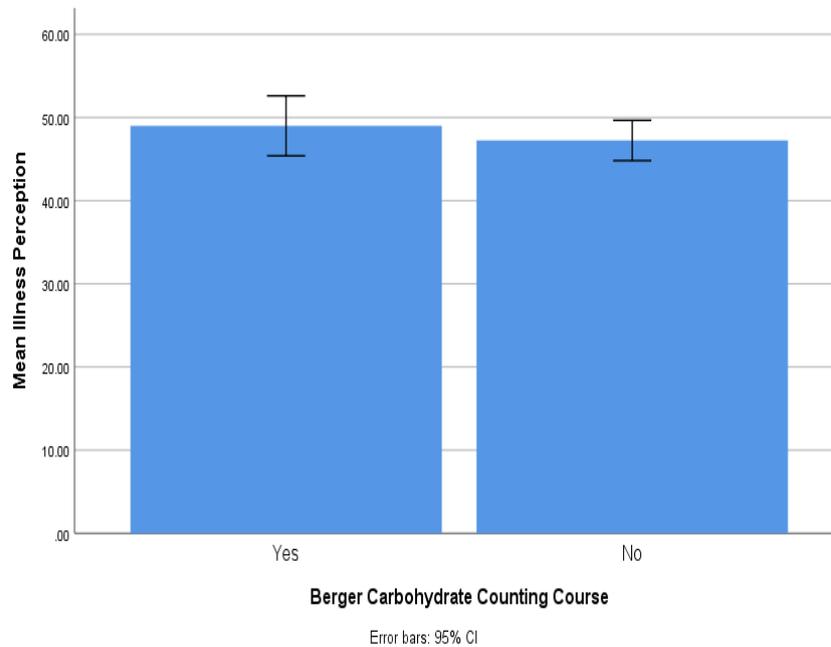


Figure 5 Mean illness perception scores for berger carbohydrate counting course

Hypothesis 6 – Results

Hypothesis 6: Those who received the training will score lower on perceived stress.

An independent sample t-test found that there was no significant difference between stress levels of those who received the training ($M = 22.06$, $SD = 7.36$) and those who didn't ($M = 20.84$, $SD = 7.00$) ($t(89) = .79$, $p = .433$, $CI(95\%) -1.85 \rightarrow 4.29$). (see figure 6). Therefore, the null is accepted. This would suggest that perceived stress scores are higher in those who completed the Berger Carbohydrate Counting Course in comparison to those who never received this training.

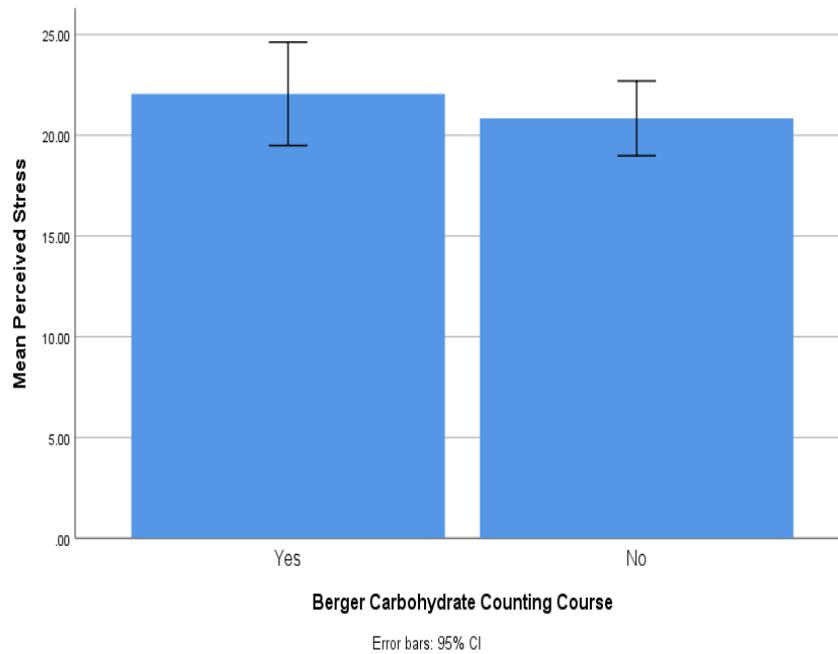


Figure 6 Mean perceived stress scores for berger carbohydrate counting course

Hypothesis 7 – Results

Hypothesis 7: Those who received the training will score higher on coping self-efficacy.

An independent sample t-test found that there was no significant difference between coping self-efficacy of those who received the training ($M = 96.61$, $SD = 52.71$) and those who didn't ($M = 107.67$, $SD = 55.37$) ($t(80) = -.87$, $p = .386$, $CI(95\%) -36.31 \rightarrow 14.19$). (see figure 7). Therefore, the null is accepted. This would suggest that those who completed the Berger Carbohydrate Counting Course scored lower on coping self-efficacy in comparison to those who never received this training.

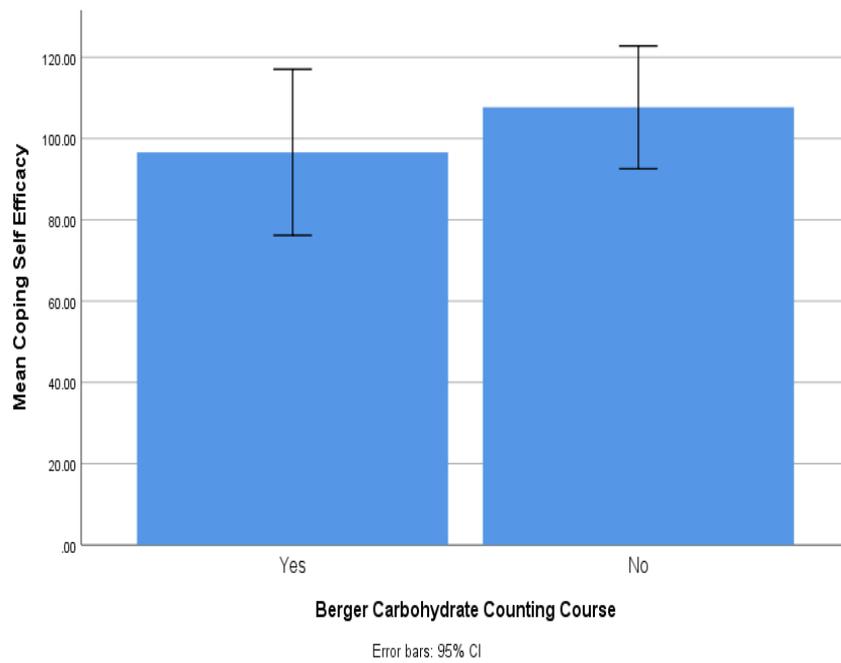


Figure 7 Mean coping self-efficacy scores for berger carbohydrate counting course

Discussion

The aim of the current study was to examine how long the patient has been living with type 1 diabetes in relation to their stress levels and coping self-efficacy. As a result of limited research on the role of the length of time the patient has been living with this chronic illness and their coping self-efficacy, the present study provided an opportunity to extend this knowledge. The role of training was also looked at which compared patients that have received training to help manage their diabetes to those who have not received training in relation to their illness perception, coping self-efficacy and stress. The role illness perception has on stress levels and coping self-efficacy was also examined. The current study consisted of seven hypotheses which are discussed below in relation to the results. The following chapter will review the research findings of the seven hypotheses as well as exploring the strengths and limitations of the current study with implications and applications for future research.

Hypothesis 1 – Discussion

The first hypothesis determined that the longer the patient has been living with type 1 diabetes the lower their stress levels will be. This hypothesis was supported, however, in contrast to the present study, research carried out by Ortiz and Myers (2014) investigated the relationship between psychological stress and metabolic control in adolescents with type 1 diabetes. Although the years the participants had been living with type 1 diabetes were recorded, the researchers were particularly interested in changes in HbA1c levels over time as a result of diabetes-related stressful events. Therefore, it is difficult to compare results against the current study.

Hypothesis 2 – Discussion

The second hypothesis determined that the longer the patient has been living with type 1 diabetes the greater the coping self-efficacy. This hypothesis was not supported and similar to the study carried out by Ortiz and Myers (2014), research conducted by Luyckx et al. (2010) examined the relationship between active coping and glycaemic control. When exploring patient's coping self-efficacy, a significant amount of research has looked at HbA1c levels which the current study did not investigate. As a result, it is difficult to compare the findings of the present study against previous research. Due to the lack of research on the role of the length of time the patient has been living with type 1 diabetes and their coping self-efficacy, the researcher felt as though it was important to highlight findings in this area.

Hypothesis 3 – Discussion

The third hypothesis determined that the patient's illness perception will significantly predict their stress levels. This hypothesis was supported and is in line with previous research. A study carried out by Baucom et al. (2015) examined whether depressive symptoms were related to greater perceived daily stress in late adolescents with type 1 diabetes whilst moderating the relationship between stress severity and poorer daily adherence in these patients. Similar to the findings of the present study, the participants with poorer average daily adherence suffered from more severe daily stress. Patients who endured more diabetes-specific stressful events as opposed to general stressful events showed signs of poorer adherence.

Hypothesis 4 – Discussion

The fourth hypothesis aimed to find a significant relationship between illness perception and coping self-efficacy. This hypothesis was supported and is in line with previous research. A study carried out by Jaser and White (2010) made use of a developmentally sensitive coping measure to investigate how particular coping strategies can influence resilience, such as quality of life in adolescents with type 1 diabetes. Patients with greater coping strategies were reported as having a better quality of life which in comparison to the current study, those who scored higher on illness perception, that is patients with a more negative view of the illness had lower levels of coping.

Hypothesis 5 – Discussion

The fifth hypothesis determined that those who received the training will score lower on illness perception. This hypothesis was not supported, however in contrast to the current study, previous research by Scholes et al. (2012) used a qualitative approach to investigate young people's perspectives of living with type 1 diabetes while also examining the relationship between metabolic control and illness perception. The findings demonstrated that the patients who showed no signs of negative responses upon diagnosis, obtained parental support in managing their diabetes and were conscientious in relation to self-care activities. The current study, however, found that those who completed the Berger carbohydrate counting course had a more negative view of the illness which resulted in them scoring higher on illness perception in comparison to those who never received this training.

Hypothesis 6 – Discussion

The sixth hypothesis determined that those who received the training will score lower on perceived stress. This hypothesis was not supported, which suggested that the participants who completed the Berger carbohydrate counting course scored higher on perceived stress in contrast to those who never took part in this training. Limited research in relation to the effects of carbohydrate counting on perceived stress levels in type 1 diabetics has made it challenging to compare results against the current study. However, as Baucom et al. (2015) has previously highlighted, those with more severe daily stress are responsible for poorer average daily adherence which contrasts with the findings of the present study.

Hypothesis 7 – Discussion

The seventh hypothesis determined that those who received the training will score higher on coping self-efficacy. This hypothesis was not supported, which is in contrast with previous findings, such as Rasmussen et al. (2011). A qualitative study was carried out to identify the life transitions that are responsible for young adults' management of type 1 diabetes, whilst also examining their coping strategies during these transitions. Diagnosis, beginning insulin pump treatment and developing diabetes complications were identified as the diabetes related transitions. The effective coping strategies mentioned by the participants included talking to others with diabetes, putting diabetes into perspective and using previous experiences to help manage their illness. The current study, however, found that those who completed the Berger carbohydrate counting course scored lower on coping self-efficacy in contrast with those who never received this training.

Strengths and Limitations of Current Study

The population of the current research is a key strength within the study. Previous research, such as the study carried out by Baucom et al. (2015) tends to focus on adolescents with type 1 diabetes only. Therefore, the findings are limited to one age group. The current study, however, collected data through a support group which included adults of all ages with type 1 diabetes and as a result, a more representative sample was obtained. The internal reliability of the perceived stress scale, coping self-efficacy scale and brief illness perception questionnaire all measured a Cronbach's Alpha value of .7 and above which is another significant strength of this study.

However, there were certain limitations in the present study that may have affected the results. Firstly, there was a considerable difference within the gender variable. As stated previously, males accounted for only 18.4% of the sample which may have resulted in a bias outcome. It is possible that the coping measure used may have been too general and could potentially be responsible for the insignificant results where this measure was applied.

Implications and Applications for Future Research

The findings from this study suggest that for future research a more specific coping measure should be used as each individual is different and a general overview of their coping may not give an accurate representation of how they are managing with the illness. While the Berger carbohydrate counting course focuses on the symptomatology of type 1 diabetes it does not account for the emotional support from family and friends that is paramount for having a better quality of life. For future research, it is important to look at not only the physical aspect of the disease but also the emotional state of the patient. Individual differences are an important factor to consider and although the opportunity to take part in training may be available to type 1 diabetics, it will only be of benefit to them if they are

willing to accept the help and want to take control of their illness. This could be the reason for the insignificant results where the role of training was examined in relation to perceived stress, coping self-efficacy and illness perception. Therefore, it is essential for healthcare professionals to inform patients of the health benefits associated with adhering to their diabetes regimen which will ultimately result in a better quality of life.

Conclusion

The findings of the present study indicate that those who have been living with type 1 diabetes for a longer period of time have lower stress levels. However, the patients' levels of coping are only somewhat greater if they have been living with the illness for a longer period of time. Future research using a more specific coping measure could potentially account for the individual differences that may have caused the results to be insignificant. The third and fourth hypotheses highlighted the significance between the patient's illness perception and their stress levels and coping self-efficacy which was in line with previous research. The role of training in relation to the patient's illness perception, perceived stress and coping self-efficacy was found to be insignificant. This further highlights the importance of social support for patient's living with this illness.

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Appendices

Appendix A: Information Sheet

Perceived Stress, Coping-Self-Efficacy and Illness Perception in Type 1 Diabetics.

My name is Ciara Lacey and I am conducting research that involves looking at stress levels, coping self-efficacy and illness perception in patients with type 1 diabetes. This research is being conducted as part of my studies and will be submitted for examination.

You are invited to take part in this study and participation involves completing and returning the attached anonymous survey. While the survey asks some questions that might cause some minor negative feelings, it has been used widely in research. If any of the questions do raise difficult feelings for you, contact information for support services are included on the final page.

Participation is completely voluntary and so you are not obliged to take part.

Participation is anonymous and confidential. Thus responses cannot be attributed to any one participant. For this reason, it will not be possible to withdraw from participation after the questionnaire has been collected.

The questionnaires and data will be securely stored on a password protected and anti-virus computer.

It is important that you understand that by completing and submitting the questionnaire that you are consenting to participate in the study.

Should you require any further information about the research, please contact Ciara Lacey, xxxxxx@mydbs.ie. My supervisor can be contacted at xxxxxxxx@dbs.ie.

Thank you for taking the time to complete this survey.

Appendix B: Demographic Questions

Please specify your gender.

- Male
- Female
- Other
- No response

What age are you?

How many years have you been living with type 1 diabetes?

Have you ever completed the Berger carbohydrate counting course?

- Yes
- No

Have you received any additional training?

- Yes
- No

If yes, please specify what training you have received.

Appendix C: Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way. Please scroll across for all options.

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? 0 1 2 3 4
2. In the last month, how often have you felt that you were unable to control the important things in your life? 0 1 2 3 4
3. In the last month, how often have you felt nervous and “stressed”? 0 1 2 3 4
4. In the last month, how often have you felt confident about your ability to handle your personal problems? 0 1 2 3 4
5. In the last month, how often have you felt that things were going your way? 0 1 2 3 4
6. In the last month, how often have you found that you could not cope with all the things that you had to do? 0 1 2 3 4
7. In the last month, how often have you been able to control irritations in your life? 0 1 2 3 4
8. In the last month, how often have you felt that you were on top of things? 0 1 2 3 4
9. In the last month, how often have you been angered because of things that were outside of your control? 0 1 2 3 4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0 1 2 3 4

Appendix E: The Brief Illness Perception Questionnaire

For the following questions, please circle the number that best corresponds to your views:

How much does your diabetes affect your life?

0 1 2 3 4 5 6 7 8 9 10
 no affect severely
 at all affects my life

How long do you think your diabetes will continue?

0 1 2 3 4 5 6 7 8 9 10
 a very forever
 short time

How much control do you feel you have over your diabetes?

0 1 2 3 4 5 6 7 8 9 10
 absolutely extreme amount
 no control of control

How much do you think your treatment can help your diabetes?

0 1 2 3 4 5 6 7 8 9 10
 not at extremely
 all helpful

How much do you experience symptoms from your diabetes?

0 1 2 3 4 5 6 7 8 9 10
 no symptoms many severe
 at all symptoms

How concerned are you about your diabetes?

0 1 2 3 4 5 6 7 8 9 10
 not at extremely
 all concerned concerned

How well do you feel you understand your diabetes?

0 1 2 3 4 5 6 7 8 9 10
 don't understand understand
 at all very clearly

How much does your diabetes affect you emotionally? (e.g. does it make you angry, scared, upset or depressed?)

0 1 2 3 4 5 6 7 8 9 10
 not at all extremely
 affected affected
 emotionally emotionally

Appendix F: Debrief Sheet

Thank you for your answers. Your response has been recorded. If you have any queries, please contact Ciara Lacey, 10343027@mydbs.ie. My supervisor can be contacted at pauline.hyland@dbs.ie.

By conducting this research which involves looking at stress levels, coping self-efficacy and illness perception in patients with type 1 diabetes I hope to gain some insight as to how the length of time the individual has been living with the autoimmune disorder can impact their perceived stress, coping self-efficacy and illness perception. In addition, I hope to identify how the Berger carbohydrate counting course as well as other training can influence those with type 1 diabetes.

While the survey asks some questions that might cause some minor negative feelings, it has been widely used in research. If any of the questions do raise some difficult feelings for you, please consider contacting some of the support services listed below, or speak to a friend, family member or professional.

Diabetes Ireland

Helpline: 01 842 8118

Available Monday - Friday, 9am - 5pm.

Email: info@diabetes.ie

Samaritans

Call on: 116 123

Available 24hrs a day, 365 days a year. Free to call.

Email: jo@samaritans.ie