

Identifying experiences of individuals with Type 2 diabetes during acceptance and adaptation of insulin therapy

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This study was carried out in a qualitative manner in order to identify the emotions and life experience of the patients with Type 2 diabetes with regard to their acceptance of insulin therapy and their experience during adaptation process disease in the Endocrinology Clinic of Ondokuz Mayıs University between December 2014 through April 2015. The data was collected by employing interview form and in-depth interview. A voice recording was made in the interviews which lasted at least 5 minutes and written minutes of the data were issued within 24 hours following the interview. The content analysis was utilized in analyzing the qualitative and statistical data in connection with the demographic characteristics. In accordance with the results of the analysis, four groups and totally 14 themes are identified in which the obtained results are classified. For the purpose of ensuring the acceptance by the patients of the therapy and their adaptation to the process, it is suggested to mention about insulin therapy at the initial phase of the diabetes training, and provide assistance for the adaptation of insulin therapy through a sympathetic approach by making a planing based upon the individual needs.

Key words: Diabetes, Insulin therapy, Adaption process, Qualitative

Introduction

Diabetes is a chronic metabolism disease in which human body cannot sufficiently benefit from nutrients such as carbohydrates, fat and protein due to insulin deficiency or disorders in insulin effect, and entails continuous medical care, the importance of which increasingly grows around the world owing to its frequency and the problems caused.^{1–3}

Diabetes is divided into two basic types being Type 1 and Type 2. In Type 1 diabetes, insulin therapy is commenced at the initial diagnosis, while in Type 2 diabetes, such therapy is initiated in case of insufficient glycemic control despite sufficient weight loss, exercising and oral antidiabetic drugs. However, the studies conducted so far suggest that individuals with a diagnosis of Type 2 diabetes will become insulin requiring within 10 years following the diagnosis.^{4–7} Insulin therapy may also be started in gestational diabetes therapy, if required.

The patients for whom the insulin therapy is initiated are expected to assume their own health responsibility through training on insulin use together with medical nutrition/exercising. However, the patients have hardships and undergo adaptation problems when fulfilling such responsibilities. Among reasons for such hardships are fear and concern for insulin, which has a significant importance.^{4–7} Sometimes, the patients resort to insulin as a last remedy, perceiving the situation as a result and

punishment of what they have done wrong in the past.⁸ The insulin therapy is also perceived negatively when offered by health professionals as a last remedy and such case leads to strict denial and avoidance by the patient.^{9,10} It has also been observed that some patients reject and experience concern due to fear of needle or lack of information.^{11–13}

Any change of behaviour by an individual in the face of a differing situation is defined as ‘adaptation’, and acceptance of suggestions by a patient in respect of his/her health and adaptation of the same to such suggestions is defined as ‘adaptation to therapy’.¹⁴ Especially, chronic patients experience adaption problems in adapting themselves to changes in the life style, and having multi-directional losses and being dependent upon others.¹⁵ Adaptation of patients to the therapy applied is directly related to the therapy’s effectiveness and favourable progress of processes during the course of disease.¹⁵ Type 2 diabetes is also a chronic disease, and it has a high likelihood of causing complications when not managed well. There is a close relation between patient’s adaptation and ensuring metabolic control. For this reason, adaptation of patients to diabetes and their involvement at every stage of the therapy is of foremost importance.

This study was conducted in order to identify the experience of individuals with Type 2 diabetes during their acceptance of insulin therapy and adaptation.

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Patients and methods

Type of study

This a qualitative study.

Population and sample

The population and sample of the study comprises the individuals visiting the Endocrinology Department of Ondokuz Mayıs University between December 2014 and April 2015, who had been diagnosed with diabetes for a period of 1 year and was on insulin therapy for at least 6 months and accepted to participate in this study. A sample was created by incorporating individuals with diabetes who are different from each other in terms of gender, education, age, years in diabetes, years in insulin use and number for the purpose of obtaining data in greater number and type.

Collection of data

At the onset of interviews, the participants were informed and their approvals were obtained. The data in the study were collected by means of two questionnaires form through semi-structured in-depth interviews using face-to-face individual interview method as suggested by the literature.¹⁶ The first of these forms is demographic features questionnaire and the second one is the semi-structured in-depth individual interview questionnaire consisting of three questions. The questions raised in this form are, 'Can you share with us what you felt when the insulin therapy was first initiated?', 'Did starting insulin impact your daily life? Are there any situation or habits that you had to change in your life?', 'Do you experience problems in relation to application of insulin injection?', and the emotions and thoughts of the individual were made apparent as much as practicable by the researcher. The interviews were commenced by a brief, plain and open ended question as much as possible and the semi-structured questions prepared in accordance with the objectives of the study were proceeded in a sequence suitable for the sub-headings contained in the questionnaire instructions with a very little interference. Additional questions intending to open a topic from which participants refrained were avoided.

The individuals were given an appointment depending upon their convenience in the study. Understanding the subjective perception and experiences of the individuals was intended and the diabetes training room which is usually silent room of the clinic was preferred for patients for them to express their emotions and experiences in respect of insulin use sincerely, comfortably and in detail. During interviews, a Samsung Galaxy Tab SM-T700 digital voice recorder phone was employed as a recorder in order to obtain the responses of patients in a proper and accurate manner.

Interviews were planned to termination when participants and researcher of meeting reached consensus about reaching on the depth of knowledge. Once interviews were done with each participants. As the number

of in-depth interviews with increasing depth of data also showed that the increase and realized that repeated often of particular issues. Research application process in the qualitative research literature as mentioned,^{17–19} the basis of the information can be terminated by concluded that begins to reach a certain saturation, sampling was finalized with 16 diabetes participants when new and different information cannot be obtained.

Data analysis and interpretation

Numerical and percentage calculations were utilized in interpreting the distributions relating to the socio-demographic characteristics of the individuals, and content analysis was conducted in analysing the qualitative data. Further to interviews, a written report in respect of the data was drawn up by the researcher within 24 hours following the interview and impressions gained from each interview were analysed on the basis of the interview results decoded in writing and the voice recordings were deleted. An inductive approach was followed during analysis to give rise to theming of concepts and thoughts expressed with respect to the subject in question, and repeating the text on which the interview was decoded, and coding and classifying such as per sub-objectives of the study.

The interviews lasted at least 5, and at most 20 minutes (9 minutes on the average). Total interview texts consist of 6273 words and Microsoft 2007 word processors was utilized during reading, classification and theming, and an effort was made in respect of understanding and clarifying the insulin experience of the individuals such as family, social environment and physical life. Ethical convenience decisions were taken prior to the application in the study, and the actual names of the individuals who provided opinion for the study and any introductory additional information in respect of such individuals were kept confidential in accordance with the principle of protection of privacy, and each participant was recorded by assigning him/her a different number.

Results

In this section, the significance groups and themes identified from decoding are presented by means of descriptive narration based upon quotes from the interview texts. Care was taken in order to present the data completely so as to relay the opinions of the individuals explanation of results were provided along with the descriptive narration.

Analysis of demographic data

The socio-demographic characteristics of the individuals having participated in the study reveal that their average age is 53.7 ± 11.9 years, with 75% men and 25% women. 18.75% of the participants was a graduate of primary school while 6.25% was a secondary school, 37.5% high school, 31.25% university graduates and 6.25% had Ph.D. degree. In return for a question of years in diabetes, 50% had diabetes for 1–10 years, 25% had diabetes for 20

years and 25% had diabetes for more than 20 years. For years in insulin use, 75% was using it for 1–5 years while this rate is 25% for those using it for a period of 6–10 years. The rate for those who use insulin once a day is 31.25% while those using insulin twice a day is 18.75%, and the rate is 50% for those who use four times a day.

Analysis of qualitative data

In this section, the data in relation to the general groups of the expressions of the individuals with diabetes who participated in the study are presented in tables.

The qualitative results of the study led to identification of four mutual groups in which raw data in respect of emotional states of mind at the start of insulin use and the daily life experience encountered during therapy with insulin are combined. These mutual groups are labelled as ‘acquaintance with insulin’, ‘perception of insulin’, ‘life with insulin’ and ‘insulin uses’. Fourteen themes in total were inferred from the raw data obtained from the individuals in line with these significance groups (Table 1).

Acquaintance with insulin

In the acquaintance with insulin group in interviews with individuals with diabetes, five subjective statement were provided as a raw data and two themes were set forth, being ‘lack of information’ and ‘unconsciousness’. One of the four statements in theme, lack of information, was; ‘It occurred to me whether it was the last remedy’

(Participant No. 13), and the individual in the theme, unconsciousness, stated that ‘I have done everything including folk’s remedies. I have had no benefit, though’ (Participant No. 1).

Perception of insulin

Sixteen subjective statements were provided as a raw data in insulin perception significance group in interviews conducted with individuals with diabetes and three themes, ‘Fear’, ‘Sadness’ and ‘Acceptance’ were identified. One of the statements in the theme, fear, was ‘I was shocked, I feared a lot’ (Participant No. 3), one of the five statements in the theme, sadness, was ‘I felt the same sadness as I had when I first learned of diabetes diagnosis, I was stressed and upset’ (Participant No. 7). There are seven subjective statements in the theme, acceptance and one expressed his feelings as ‘I have internalized it positively since it is required’ (Participant No. 7).

Life with insulin

Sixteen subjective statements were provided in the life with insulin significance group in interviews with individuals having diabetes and five themes were identified as ‘Adaptation difficulty in maintaining therapy’, ‘Change of habits’, ‘Problem of injecting in community’, ‘Thoughts of Community on Insulin’ and ‘Feeling Better’. One of the five subjective statements in theme, adaptation difficulty in maintaining therapy, was ‘I do not constantly carry any food with me. Sometime I have meetings and skip meals’ (Participant No. 12) and there are three subjective statements in the theme, change of habits, and one individual stated that; ‘I used to love desserts. But now I try not to take stuff related to desserts’ (Participant No. 12). Injecting in the community theme consists of five subjective statements and one individual stated that; ‘I always go into a recess when I inject myself if I am with people or friends. I do not do it in the open but in a secluded corner, to avoid questions’ (Participant No. 12), and a subjective statement in respect of the theme, thoughts of community on insulin is ‘There is a kind of perception as though people on insulin are finished or come to the end of the road. I think starting on insulin is not thoroughly told to the people in our country’ (Participant No. 8). Two subjective statements are given in the theme, feeling better with one individual stating; ‘I become jolly when I get positive results so as my complaints have diminished’ (Participant No. 16).

Use of insulin

In insulin use significance group, 21 subjective statements are given as a raw data in the interviews conducted with the individuals with diabetes, and four themes were identified as ‘Mistakes in insulin use’, ‘Issue of carrying insulin’, ‘Fear of needle’ and ‘Lack of information’. One of the seven subjective statements in the theme, mistakes in insulin use, was ‘For example, the end of needle gets bended sometimes. I get swelling, I insert the needle

Table 1 Groups and themes of statements of individuals with diabetes who participated in the study.

General classification	Significance groups	Themes	
Emotional cases experienced with the start of insulin treatment (21 subjective statements)	Acquaintance with insulin (five subjective statements)	Theme 1: ‘Lack of Information’ Theme 2: ‘Unconsciousness’	
	Insulin perception (16 subjective statements)	Theme 1: ‘Fear’ Theme 2: ‘Sadness’ Theme 3: ‘Acceptance’	
Daily life experience faced during insulin therapy (37 subjective statements)	Life with insulin (16 subjective statements)	Theme 1: ‘Adaption in maintaining Therapy’ Theme 2: ‘Change of Habits’ Theme 3: ‘Injection Problem in Community’ Theme 4: ‘Thoughts of Community on Insulin’ Theme 5: ‘Feeling Better’	
		Insulin application (21 subjective statements)	Theme 1: ‘Mistakes in Insulin Use’ Theme 2: ‘Issue of carrying Insulin’ Theme 3: ‘Fear of Needle’ Theme 4: ‘Lack of Information’

directly without squeezing it' (*Participant No. 11*) while one of the four subjective statements in the theme, issue of carrying insulin 'Insulin has this issue, carrying it on you is a problem. You can take any tablet easily but it is not that easy with insulin' (*Participant No. 16*). There are six subjective statements in the theme, fear of needle, and one stated that 'It is very disconcerting for me when the end of syringe is that big' (*Participant No. 8*), and one of the individuals in the theme, lack of information where there are three subjective statements, stated that 'An adverse effect may be the side effect. A feeling of fullness, especially swelling in your tummy. Then blurry eyesight, and I sometimes read this in medications as a side effect' (*Participant No. 6*).

All these subjective statements and identified themes obtained from the experiences of the individuals with diabetes will be addressed in the discussion chapter.

Discussion

The insulin therapy is not a form of therapy which is easily acceptable on grounds of different reasons such as fear, concern and lack of information for individuals with diabetes. The fact that both it is not universal and disregarded by the health professionals leads to challenges in its management and in rendering the issue apparent.²⁰ The change of habits, impact on the daily life and the approach of the community on insulin result in obstacles for individuals to begin insulin therapy, or maintain such therapy and further, experience problems in accepting it. Accordingly, the qualitative results of the individual who participated in the study will be discussed in line with the themes identified. The results of the study are expected to display an analogy with studies in the literature based on their subjectivity.

Emotional feelings experienced at the start of insulin therapy

Acquaintance with insulin: in interviews conducted with individuals with diabetes, five subjective statements were provided as a raw data which gave rise to the themes of 'Lack of information' and 'Unconsciousness'.

Lack of information

Telling an individual with a diabetes that he/she is required to get insulin shot every day instead of tablets taken orally causes many a time sadness, fear or reactions invoked by lack of information. In a study conducted in the past, it was observed that majority of the individuals were reluctant with starting insulin therapy and rejected the therapy when insulin therapy was suggested.²⁰ In another study, it was discovered that the individuals perceived the insulin therapy usually as a last ditch to resort or a punishment given for something that they had done, and such led to a strict denial and avoidance.^{8–10,21} The emotions felt may be interpreted as reactions given as a lack of information and in turn, a kind of denying the unknown. In the study that we have carried out, one of the individual expressed his feelings as 'I was thinking

after having started insulin therapy that I was at the end of the road and it was time to bid farewell' (*Participant No. 16*). While the individuals with diabetes are said to believe in the fact that the use of insulin will restrict their life and their disease will get worse,²² another literature sets forth statements like 'Insulin may cause organ damage'²³ 'If I am directed to begin with insulin therapy, it then means that I am very ill and no other therapies are sufficient and I will soon die'.²⁴

The individuals' perception of starting insulin as the last phase of the disease may be interpreted as thoughts relying upon the lack of information. It may be considered that such lack of information results in negative emotions and concerns and in turn, impacts the progress of the disease.

Unconsciousness

When an individual faces a problem and obstacle, they may acquire different thoughts and behaviour unwittingly. For example, the preference of conventional therapy methods in the first place rarely come out as an effort of searching for a remedy.

An exemplary study is the one conducted with the Chinese people in Canada. Distrust in the Western medicine and trial of Chinese medicine prior to conventional insulin therapy was discovered as a cultural impediment in Chinese people living in Canada.²⁵ In another study carried out with an ethnic group, the individuals shared their feelings through expressions intended to hinder the start of insulin by stating that 'I cannot make sure whether it is artificial or not after I have discovered that it is something animal based'.²⁶ In our study, an individual with diabetes expressed his feeling as 'I could not get hold of the medication for that. I have done and tried everything like folk's remedies' (*Participant No. 1*).

Negative thoughts and trial of different conventional therapy applications cause delays in starting the therapy, and are considered as significant factors adversely affecting the adaptation of the patient to the disease.^{23,26} For this reason, detailed training is critical to eliminating the lack of information of patients in respect of diabetes and insulin.

Perception of insulin In interviews conducted with individuals having diabetes, 16 subjective statements were provided as a raw data in perception of insulin significance group and themes of 'fear', 'sadness' and 'acceptance' were identified.

Fear

Fear is a reaction given to any consciously recognized and usually known external threat and danger; that is, an emotion invoked by the thoughts of a person. Since 'danger' is involved in such thoughts, a reaction of fear occurs.²⁷ People who face identical incidents may give different reactions based on different thoughts. The reasons of fear must be pursued in order to cope with it, and the issue of defining the problem must be sorted

out.²⁷ A result of a study reveals that 74% of the individuals with diabetes fear and feel physiological stress due to their state.²¹ Snoek in a similar study advises that an individual starting on insulin therapy thinks as ‘I am now seriously ill’, and such state of mind brings in fear and concern.²⁸ In our study, one of the individuals expressed such emotion as ‘Frankly, I got shocked and feared’ (*Participant No. 12*).

In diabetes trainings, the preliminary information to be given in respect of insulin despite no insulin use may contribute to individuals when they cope with their own fears.

Sadness

Sadness is a form of emotional expression; a behavioural reaction individuals demonstrate when they face a situation imposing fear or concern. When people experience a bad incident or are exposed to such incident, they may feel this emotion. In a study intended to identify the issues of individuals with Type 2 diabetes at the start of insulin therapy, the individuals expressed their sadness and concerns as ‘It means it is now so serious and I am really sad’, ‘It means I am about to die’.²¹ In our study, one of the individuals expressed his sadness by saying that ‘I feel so unmotivated and bad. That is, I am lying at the death’s door’ (*Participant No. 6*) while other stated that ‘The roof fell in, I was really hurt’ (*Participant No. 16*).

Individuals with diabetes live through mixed feelings when they start insulin therapy and they usually name such feeling as sadness. It may be considered effective if such individuals are provided with emotional support at first instead of complicated information.

Acceptance

At the start of insulin therapy, the initial reaction of the individuals is denial many is the time. This emotion may turn out to be acceptance and adaptation at a later stage. People accepting their disease are aware of their disease and the therapy required for such disease, and know of some restrictions and challenges.²⁹ Since they can do this, they practice such in their daily life and get positive results. The following comments are provided in the literature; ‘I am ready to get the good for me. It is not very important how big is the needle. It is okay with me if it would heal me’.²¹ ‘Insulin is good for ensuring good glycemic control and preventing complications.’²³ In our study, an individual with diabetes stated that he accepted insulin therapy by saying that ‘I have asked for insulin therapy with pleasure, for the disease would not get worse’ (*Participant No. 4*). However, some of other patients stated that they accepted more easily due to the person who gave them the training, and the persuasion of the doctor who suggested the therapy and the support of the people around.

Accordingly, it may be stated that acceptance of insulin therapy is an important factor affecting the adaptation to

therapy and in turn, facilitating the therapy; however, the factors ensuring the acceptance are also significant.

Daily life experiences lived through insulin therapy

Life with insulin In interviews conducted with individuals with diabetes, 16 subjective statements were provided as a raw data and further, the following themes were identified: ‘Adaptation Difficulty in Maintaining therapy’, ‘Change of habits’, ‘Issue of injecting in Community’, ‘Thoughts of Community on Insulin’ and ‘Feeling better’.

Adaptation difficulty in maintaining therapy

Adaptation of an individual to diabetes is defined as the patient’s acceptance of the suggestions made regarding health and his compliance with such suggestions.³⁰ The individuals are expected to apply the suggested therapy and make some changes in their life accordingly. However, the patients may face different problems when trying to adapt to the disease. Cultural structure and attitude, faith, behaviour and knowledge of the individual relating to the disease show that their adaption may vary.^{31,32} It is discovered in the literature that the individuals do not make injections due to their disorderly life or their physical state, and such impacts their adaptation to the therapy. This is expressed by one of the individual as ‘Please let me proceed with natural ways for I do not know how to make the injection and I further fear for that. Is there anybody who can make my injection’.²⁴ The greatest discord in individuals with Type 2 diabetes is known to be correlated with diet and insulin injection.^{33,34} In a study, it is advised that individuals disrupt insulin therapy and had issues with regular applications.³⁵ One individual stated this as ‘I get stressed out when the time comes for injection. I cannot do my injection due to annoyance and stress. If I do one shot, I do not do the other and I go pale’. In our study, one individual expressed that he experiences problems in adaption while leading his daily life by saying that; ‘I cannot cook food, I cannot prepare it. I always skip cooking and insulin shots’ (*Participant No. 13*).

It may be said that individuals with diabetes should be supported through trainings in each check-up in order for them to cope with the adaptation difficulties experienced in maintaining therapy, and planning the diabetes training specific to the person and his/her life style will contribute to the patient’s adaptation.

Change of habits

The individuals with diabetes are expected to regularly apply the suggested therapies and make some adjustments in their life style accordingly. However, there are some long-lasting habits in life and it is not that easy to change such habits. Sometimes, giving up on habits may cause the person to isolate himself from the community. In a study conducted, one individual stated that ‘We used to have business lunches and dinners. I do not want to attend such meetings no longer. I cannot say that I am ill and cannot eat whatever you eat when I am with

people. They already look at me with sympathetic eyes and I do not attend the meetings'.³⁵ In our study, one of the individuals expressed that he had changed his habits, but such adversely impacted his daily life by stating that, 'I was more comfortable then, it prevented me' (*Participant No. 14*).

Change of habits may affect person's life in different aspects. It may be suggested that choices of life style appropriate for the state of people may be beneficial, and it is more convenient if they arrange the activities they lead in their life according to the form of therapy they receive.

Issue of injecting in community

Sufficient social support ensures adaptation to therapy positively, affecting protection and improvement of health, therapy and rehabilitation of diseases, and improves the life quality of patients by reducing the social isolation. For this reason, social environment communication is important especially when doing the injection in the community. People abstaining from the reaction of community, individuals tending to conceal the disease may feel uncomfortable with the glances of people or the questions they may raise in applying injection in the community, and think that this may restrict their life.²³ In studies conducted, the individuals with diabetes mentioned about the challenges of using injection in the community. For example, one individual stated that he does not want to use insulin injection in the community by saying that 'I think nobody likes to carry such stuff (insulin and devices). One seems awkward when he does it in the community. People learn that they have diabetes. We do not want anybody to know that we have diabetes. We want people to see us as normal people'.²¹ In our study, one individual stated similarly that 'The Perspective of the community is not much prone to insulin therapy and such fact demoralizes and demotivates us. For this reason, I always prefer a secluded corner' (*Participant No. 8*) and expressed that injecting in the community demoralizes and demotivates him.

In order to overcome such issues, it is important to motivate the individual with diabetes and for him to accept the disease. However, we are of the opinion that this problem may be overcome easier if awareness is raised in the community.

Thoughts of community on insulin

Although the diabetes is a frequently encountered chronic disease, the people living in the community and who never have come across diabetes before may not be informed about it. Non-existence of sufficient knowledge about diabetes and not knowing the insulin as a form of therapy may be disconcerting for some people. It is seen in the conducted studies that the perspective of community is important in adaptation to therapy and many of the individuals with diabetes stated that it is disconcerting to be treated different than other people. For example,

one individual in a study expressed his discomfort by stating that 'The knowledge of community relating to the injections are very misleading. The community should be trained in respect of the fact that there is no problem with having injections'.²¹

A review in other literature shows that one individual put forward his discomfort by saying that 'My family did not want me to start injection on ground of addiction concerns'²⁴ and other individual expressed his indignation on the illiterate staff who has no knowledge of therapy by stating that 'One day I went to a hospital, and the time came for my insulin injection. I did my injection in the garden of the hospital. The servants witnessed this chucked me out, claiming that I am on drugs'.³⁵ In our study, in results similar to those in the literature, one of the individual expressed his feelings by saying that 'There is a perception that those on insulin are finished and is at death's door' (*Participant No. 8*).

A review of the results of these studies suggests that raising awareness in the community may contribute to overcoming such conceptions, but parameters such as cultural differences and level of education may impose some obstacles.

Feeling better

The individuals with diabetes should be informed as to their disease and the needs in order for them to look after themselves and feel better. An individual informed about the health needs is eager to assume the responsibility of the care³⁶ and knows what to do and when and adjust himself accordingly. For instance, an individual in a study stated that 'Insulin is effective in ensuring the glycemic control and preventing the complications'.²³ One of the individuals with diabetes expressed his feelings as 'I can say that I have become more energetic' (*Participant No. 16*).

As may be seen in the studies, it is crucial for the patient to accept his disease and adapt himself to it. For this purpose, it may be considered that informing the individual thoroughly by means of trainings and repeating such information at each check will make patients feel better.

Use of insulin

In interviews conducted with individuals with diabetes, 21 subjective statements were provided as a raw data and the following themes were identified: 'Mistakes in Using Insulin', 'Issue of Carrying Insulin', 'Fear of Needle' and 'Lack of Information'.

Mistakes in insulin injection

The individuals on insulin may make some mistakes in using insulin, and such mistakes adversely affect the metabolic parameters. That's why; the insulin must be applied properly. However, most of the time, the individuals digress from proper applications and tend towards incorrect uses. The studies conducted advise that the individuals with diabetes frequently makes injection

mistakes.³⁷ In our study, one individual stated his mistake by saying that ‘I have used it at nowhere but on my tummy. I cannot do it on any other part of my body as I cannot pluck up my courage’ (*Participant No. 4*) while other individual stated his own mistake by stating that ‘I have some swollen parts on my tummy, it turned out that I have been doing the injection on the same location and insulin has not infiltrated at such area’ (*Participant No. 10*).

In our study, the individuals informed that they make some mistakes with injection time, area rotation and improper use of injections. It is known that the minimization of mistakes by the individuals with injections may positively contribute to their therapy. It is suggested for individuals to review the use of injections at each check in order to prevent mistakes in insulin injections.

Issue of carrying insulin

Insulin is a type of medication which should be carried through cold chain. However, individuals may carry on themselves insulin pens (22–24°C); provided that spare pens are stored in the fridge (+2 and +8°C) when the necessary temperature is attained.³ The importance of such carriage method is told to the individuals by the diabetes nurses at the initial insulin training. Some individuals may find such carriage method challenging, but they get used to it in the course of time and such problem is overcome.

In a review of the conducted studies, some individuals with diabetes thought that travelling is difficult on ground of a necessity to constantly keep the insulin in the fridge. For instance, one of the individual expressed his trouble saying that ‘I have heard that I must keep insulin in the fridge. How long does it stand if it is taken out of the fridge? I cannot go out if I am supposed to carry a fridge with me’.²¹ In our study, there are similar statements to those contained in the literature. For example, one individual stated that his daily life is affected due to this problem of carriage as ‘I did not go on a long vacation due to the issue of carrying’ (*Participant No. 16*).

As may be seen in the studies conducted, the issue of carrying insulin is a problem which should not be underestimated. For this reason, informing the individuals about the method of carriage, the bags that they may use for carriage and the supply of such bags may contribute to overcoming such problem.

Fear of needle

It is seen that majority of the individuals especially with Type 2 diabetes are reluctant to start with insulin therapy and reject the therapy when it is first prescribed.²⁰ Most of the individuals with diabetes are afraid of doing injections on themselves at first. However, they overcome such fears and commence to make their own insulin shots. Some cannot get used to using despite a lapse of time and experience the fear of needle permanently.²⁰ In the 32nd Traditional Meeting of American Association of Diabetes Educators in 2005, it was

advised that fear of needle and injection sting are among the major obstacles in starting with insulin therapy.¹¹ In another study, more than 50% of the doctors say that the pain attributable to injection is the principal obstacle in starting the insulin therapy.¹³ In a review of the literature, one individual expressed his fear of needle as, ‘I got a fear when my doctor mentioned about the insulin needle. I cannot dare to watch my brother-in-law doing the injection’.²⁴ In our study, one individual stated that ‘I did not want it at first for I was afraid of doing the injections’ (*Participant No. 6*).

As the study suggests, most of the individuals with diabetes fear the injection needle. For this reason, it may be considered that mentioning about the features of the needles and ease of use may relieve them. The first injection is recommended to be performed in the clinic together with a doctor. It may also be said that in individuals with a fear of needle, the close examination of this issue and acting together with the diabetes team in order to overcome the problem may benefit the patient.

Lack of information

The individuals with diabetes are always reluctant for insulin therapy at the beginning. However, the studies show that such reluctance is based upon the lack of information. One individual stated on this matter that ‘If I have been told about insulin all along, I would have grasped it better and be more eager in accepting the insulin injection’.²¹ As may be seen in the conducted study, mention of insulin therapy and importance at the early stage is said to be more effective in accepting the therapy. In our study, one of the individuals stated that, it is said ‘I keep on eating the desserts and have a low blood sugar of 30 unit insulin instead of 20 unit insulin and I handle it’ (*Participant No. 1*).

Accordingly, it may be said that telling respectively about the steps in therapy of diabetes at the initial diagnosis and early stages contribute to lack of knowledge and person knowing that use of insulin is part of the therapy and early access to the information may positively contribute to the progress of the therapy.

Conclusion

Insulin training of an individual with diabetes should be prepared in line with the individual goals. The individual should be supported in psycho-social aspect in consideration of life style, age, motivation, general health status, personal skills, information in respect of diabetes and insulin and targets of therapy, and the knowledge deficiencies of the patient about the disease should be eliminated for the purpose of overcoming fear, uneasiness and concern with respect to insulin. During such process, individual’s acceptance of insulin and his adaptation to the therapy should be taken into consideration.

The diabetes nurses should possess good communication skills in order to ensure the individuals approach the insulin therapy moderately, and improve their

perspective on insulin. It is suggested that the sample number should be increased in future studies in order for the results of the study to shed a light on the future training and obtain more reliable results in the application.

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