Research Article

Insulin for Individuals with Diabetes; A Photovoice Study

Rukiye BURUCU [1] 🆔 Canan GÜNGÖR [2] 🆔

[1] Assistant Prof. Dr., Necmettin Erbakan University Seydişehir Kamil Akkanat Faculty of Health Sciences, Faculty Member, Konya, Turkey
[2] Ministry of Health Konya City Hospital, Specialist Nurse, Konya, Turkey

ABSTRACT

Purpose: Diabetes is an important health problem, and the most important agent used for its treatment is insulin. However, it is known that patients have problems with insulin use. This study aims to question what insulin means for people with diabetes who use insulin and their wish to use it.

Method: The participants of the study consisted of 19 people between the ages of 18 and 70 (Average: 45.57±11.44) who were diagnosed with type 2 diabetes and using insulin. In the research, the photovoice method, one of the qualitative research methods, was used. Photos received from individuals were selected as a baseline, in-depth individual interviews were collected by using a semi-structured interview form. Content analysis and interpretation of the data were carried out by two researchers per Colaizzi's steps.

Findings: The data obtained from the participants were collected in five main themes and 19 sub-themes. Among the themes, "issues" (37.97%) and sub-themes "lack of knowledge" (20.25%) were the most expressed topics by the participants.

Conclusion: For people with diabetes, insulin means craving for food, deterioration in body image, further deterioration of health, anxiety about losing control, desperation, and unhappiness due to prohibitions. Individuals use insulin not willingly, but out of necessity. The reason for not wanting to use it is the stigmatization, problems with the workplace, the thought of causing weight gain, the possibility of not being self-sufficient due to the risk of hypoglycemia, and the painful application.

Key Words: Diabetes, Insulin, Nursing Education, Nursing

1. INTRODUCTION

Diabetes is an important public health problem whose number of sick individuals is increasing day by day, and it appears as type1 and type2 diabetes (WHO, 2021). Its chronic characteristic is important because of its systemic effects (ANA, 2021). Type2 diabetes is a metabolic health problem caused by an increase in blood sugar after impaired insulin secretion, with impaired carbohydrate, protein, and fat metabolism (WHO, 2021). Individuals with type2 diabetes account for 90-95% of all individuals with diabetes. It is stated that the number of patients with type2 diabetes has doubled in the last ten years, and it is feared that it will continue to increase exponentially in the future. Insulin is one of the drugs used for the treatment of type2 diabetes. If blood sugar control is not reached with the treatment used, the patient may experience greater health problems related to diabetes (TCSağlıkBakanlığı, 2019). Increasing drug compliance and the quality of life of the individual in a situation can be achieved by improving patients' self-management, that is, by managing their disease (Mumcu & İnkaya, 2020).

2. BACKGROUND

It is known that glycemic controls are not good in diabetic individuals who do not have sufficient disease management in diabetes and complications related to diabetes increase (Arda Sürücü & Samancıoğlu, 2018). Individuals with diabetes may worry that they will be worse off when they use insulin because they have not been able to get the right information about diabetes, treatment, and self-care (Allen et al., 2017). It is stated that the experience of worsening of the general condition after unconscious use of insulin and the fear of addiction is effective in this (Alomran et al., 2020). The necessity of executing insulin several times a day also affects individuals negatively. The group affected here is mostly not in good socioeconomic condition (Bermeo-Cabrera et al., 2018; Holmes-Truscott et al., 2018). Moreover, the fear of stigmatization in society (Holmes-Truscott et al., 2018) and the age, education level, and gender of the individuals also affect their insulin use and treatment compliance (Soylar et al., 2020). Those who do not want or hesitate to use insulin may prefer alternative treatment, sometimes completely and sometimes in the hope of supporting insulin therapy (Can Çiçek et al., 2021).

The most important factor in ensuring the adequacy and continuity of diabetes treatment is diabetes self-government (Gulam et al., 2017). In general, studies show that patients' drug compliance is not very good, there is a

negative perception towards insulin, and the reasons for this should be investigated (Allen et al., 2017; Alomran et al., 2020; Arda Sürücü & Samancıoğlu, 2018; Bermeo-Cabrera et al., 2018; Gulam et al., 2017; Holmes-Truscott et al., 2018; Holmes-Truscott et al., 2017; Karabayraktar et al., 2017; Soylar et al., 2020). It is stated that the education of diabetic individuals should be updated using the results of the research (Karabayraktar et al., 2017).

Social studies can be studied with a phenomenological approach (Sönmez & Alacapınar, 2018). Photovoice is a method in which the same approach is used, but individuals are expected to express their feelings and thoughts that they want to express with photovoice (Çetin et al., 2018). Especially with this method, it opens the door for individuals to express the worrying situations and difficulties that exist in their lives, to discuss this issue, and to make their voices heard throughout society. In this way, it is seen that there are great meanings under the object that looks like a single photo (Bullard, 2018), enabling other individuals to hear their voices, thoughts, and opinions with the photographs of the participants (Evans-Agnew et al., 2017). Photovoice studies with diabetic patients have been found in the literature, but insulin use does not appear to be questioned separately in these studies (Akkaya Kozak et al., 2021; Leung et al., 2019; Mount, 2020; Yi-Frazier et al., 2015). Thus, in this study, it is aimed to question the meaning of insulin for people with diabetes and their willingness to use it.

Research Question

- ✓ What does insulin mean for individuals with diabetes?
- ✓ Do individuals with diabetes voluntarily administer insulin?
- ✓ What are the reasons that affect their willingness to use insulin?

3. METHOD

3.1. Design

The study is a qualitative study in which the phenomenological approach (interpretive phenomenology) was used. Data were collected by photovoice method and in-depth individual interviews. Individuals were reached by snowball sampling method.

3.2. Participants

The population of the study consists of patients with type 2 diabetes who are treated with insulin. While sample calculation is not recommended in qualitative studies (Sönmez & Alacapınar, 2018), it is stated that 5-25 participants may be convenient (Creswell & (Çeviri Editörü: Sözbilir, 2017), and it is explained that analysis will be difficult if there are many participants (Baltacı, 2018). However, it is also underlined that data saturation should be reached (Baltacı, 2019). The collection of the data was started with two people with type 2 diabetes from the family members of the researchers and collected with the snowball sampling method from other patients reached through those patients. To reach data saturation, data collection was continued until similar answers were received from the participants. The sample size was 19 individuals who met the inclusion criteria. Those who were diagnosed with type 2 diabetes, used insulin for at least a month, administered insulin by themselves, could take photos, had internet access, could send their photos online, could read and write, were between the ages of 18-70, and agreed to participate in the research were included in the study. Those with insufficient reading, speaking, and understanding skills and those with visual impairments that prevented them from taking photographs and reading the consent form were excluded.

3.3. Data Collection

Data Collection Technique and Tools: Data were collected by in-depth individual interviews and photovoice methods. In data collection, participant information form and semi-structured interview form were used.

Participant Information form: *Consisted of 12 questions based on the literature (Allen et al., 2017; Alomran et al., 2020; Bermeo-Cabrera et al., 2018; Holmes-Truscott et al., 2018) questioning the socio-demographic and insulin use of the participants.*

Semi-Structured Interview Form: The semi-structured interview form contains a total of 5 open-ended questions. To ensure reliability in the research, the opinions of 5 experts were taken onto the semi-structured interview form, and a Miles & Huberman fit analysis was performed (Arastaman et al., 2018; Baltacı, 2017, 2019).

Semi-Structured Interview Form Questions

- ✓ What do you see in this photo?
- ✓ What does this image tell you?
- ✓ How does this image relate to your life and insulin administration?

✓ What do you think about insulin administration?

✓ What can we do to make your insulin administration more effective?

Data Collection: The data were first collected from patients who came to diabetes education nursing at a hospital, but either there was no return for the photos or no usable photos were obtained from the patients there. For this reason, data collection from this hospital was renounced, and other diabetic individuals were reached through a patient reached from the hospital to achieve the sample suitable for the purpose. Data were collected between March and September 2021. First of all, the research was explained to the participants, and written consent was obtained from the individuals. Photographing rules were given in detail in the statement. Individuals were interviewed face-to-face, explanations were made, and consent was obtained. COVID-19 precautions were followed in this meeting (WHO, 2020). The individuals were then asked to send the photos they took with their mobile phones/cameras to the e-mail addresses of the researchers. After the submitted photos were examined and evaluated by the researchers, an in-depth individual interview was conducted online with the owners of the appropriate photos. A semi-structured interview form was used in the interview. Individual interviews lasted an average of 30 minutes. While collecting the data, one researcher acted as a moderator and the other one as a reporter. Participants did not accept audio and video recordings, therefore photographs and reporter recordings were used in the analyses.

Independent variables: Participant's age, gender, educational status, employment status, duration of insulin use, number of daily administrations of insulin.

Dependent variables: The state of education, the person trained, the status of caring about using insulin, the status of wanting to stop using insulin, the status of exercising, the status of complying with the diet.

3.4. Data Analysis

The data were evaluated with Colaizzi's phenomenological interpretation method (Sanders, 2003). To ensure reliability, Miles & Huberman compatibility analysis was conducted on the semi-structured interview form and the determined themes. The expert opinion unison score for the semi-structured interview form was 0.80, and the coders' unison score for the themes was 0.81 (Baltacı, 2017). For the data in the information form, numbers, percentages, averages were used, and only general information was presented without analysis. Reporter records and photographs were combined within the first 72 hours after the interviews with the participants, and data were reduced individually by the researchers. The steps of the application (Table 1) and the themes (Table 2) are presented below.

The Validity And Reliability Of The Research

Reliability, consistency, and confirmability in the research were ensured through validity, credibility, and transferability (Arastaman et al., 2018; Cypress, 2017). The confirmability of the research was carried out with the external expert audit technique by taking the audit trail and expert opinion. For consistency in the study, a total of 4 specialists were consulted by two academicians and two diabetes education nurses for the semi-structured interview form used in the interviews. To ensure credibility, the answers given in the interviews were summarized and repeated by the moderator, repeated questioning, and participant control was carried out and confirmed with the feedback of the participants (Jeong & Othman, 2016). An appropriate sampling method was used to ensure transferability, and it was discussed and reported in the light of the literature (Cypress, 2017; Jeong & Othman, 2016).

Table 1. Analysis steps according to Colaizzi's phenomenological interpretation method

1.	Saving photos and participant statements*
2.	Identifying important photos and phrases**
3.	Making sense of statements**
4.	Grouping of themes**
5.	Detailing the grouped themes**
6.	Making the researched phenomenon understandable
7.	Description of the basic structure***

*To avoid data loss, reporter texts were combined, recorded, and read by all researchers within the first 72 hours after each interview.

**Miles & Huberman model was used to determine, interpret, and group statements.

***The participants were contacted and confirmed again at the points of hesitation without the researchers' comments.

3.5. Ethical Considerations

Permission was obtained from the Social and Human Sciences Scientific Research Ethics Committee of Necmettin Erbakan University to conduct the research (Date: 19.02.2021/ Meeting no: 02/ Decision no: 2021/119). Written consent was obtained from all participants. The research was planned, completed, and reported by the Standards for

Reporting Qualitative Research (SRQR) checklist (O'Brien et al., 2014). The research was conducted in accordance with the Declaration of Helsinki. Interview records and photographs are kept encrypted on the researchers' computers.

4. RESULTS

A total of 19 people participated in the study. 27 photographs from these participants were examined and 12 photographs were found suitable for evaluation, eight of which are included here. Most of the participants were women (52.6%), most of them were using insulin 4 or more times a day (47.4%), using whole-body rotation for insulin administration (63.2%), insulin use duration of 37 months or more (52%), all (100%) stated that insulin is important but still, all (100%) did not want to apply it, and most of them consisted of those who did not think of quitting insulin (84.2%), did not exercise (78.9%), and did not comply with their diet (84.2%), and who stated that they received their diabetes education from doctors and nurses (63.2%) (Table 2).

Table 2: Distribution of some characteristics of the participants (n:19)

	Average	
Age	45.57±11.442 (Min:26.00; Max: 68.00	
	Number	**%**
Gender	Female: 10	52.6
	Male:9	47.4
Education	Primary Education: 7	36.8
	Secondary Education:5	26.3
	High School Education: 7	36.8
Working Status	Worker: 8	42.1
	Nonworker: 8	42.1
	Retired: 3	15.8
Insulin administration frequency	1time/day:3	15.8
	2times/day:3	15.8
	3times/day:4	21.1
	4times and more/day:9	47.4
Insulin application zone	Just arms:3	15.8
	Only legs:2	10.5
	Only belly area:2	10.5
	Whole body:12	63.2
Insulin use time	1-12 months:4	21.1
	13-24 months:3	15.8
	25-36 months:2	10.5
	37 months and more:10	52.6
Request to apply for status	Yes: 0	0
	No: 19	100
The fact that insulin is important	Yes: 19	0
	No: 0	100
The thought of quitting	Yes:3	15.8
	No: 16	84.2
From whom the training was received	Nurse:12	31.6
	Doctor and Nurse:6	63.2
	Other: 1	5.3
Consideration of quitting	Yes:3	15.8
	No:16	84.2
The state of compliance with the diet	Yes: 3	15.8
	No: 16	84.2
Status of exercising	Yes: 4	21.1
	No: 15	78.9

The statements of the participants were examined; a total of 79 statements were grouped under five main themes and 19 sub-themes were identified. The main themes are respectively as follows: issues (37.97%), not being able to accept (29.11%), the perception of losing control (17.72%), social issues (8.86%), and fears (6.32%) (Table 3).

Table 3. Distribution of identified themes

Main Themes	Sub-Themes	Number	%
Issues	Lack of knowledge	16	20,25
	Craving to eat	8	10.52
	Injection administration problems/pain	6	7.59
		30	**37.97**
Not being able to accept	Not being able to accept	8	10.12
	Distorted body image	6	7.59
	Anxiety	6	7.59

	Ambivalent emotions	3	3.79
		23	**29.11**
The perception of losing control	The problem of compliance with treatment	5	6.32
	Awareness	3	3.79
	Desperation	2	2.53
	Unhappiness	1	1.26
	Captivity	1	1.26
	Not meeting expectations	1	1.26
	Regret	1	1.26
		14	**17.72**
Social issues	Unemployment and workplace problems	4	5.06
	Stigmatize (Infertility)	3	3.79
		7	**8.86**
Fears	Fear of not being self-sufficient	2	2.53
	Fear of amputation	2	2.53
	Loneliness	1	1.26
		5	**6.32**
	Total	**79**	**100**

The data obtained from the participants were collected in five main themes and 19 sub-themes. Among the themes, "issues" (37.97%) and sub-themes "lack of knowledge" (20.25%) were the most frequently expressed topics (Table 3).

4.1. Theme 1: Issues

4.1.1. Lack of Knowledge

Photo 1: Lack of Knowledge
The photo shows K16's nail clippers, which seem insignificant but are very valuable to him/her.

K16: "My nail clippers. Diabetes hit my feet, I got wounds on my nails and fingers, I was scared so much. I cut my nail wrong. I had one small nail clipper with which I used to cut my nails as much as I could. Then, the wounds came out, they said the nail clippers were wrong. I didn't know, I thought with a little one I could cut it to the bottom of my nail. But I shouldn't have gotten to the bottom. Then, the children bought the big one, now I am more comfortable with it. Besides, I can hold it better in my hand, it's all because I use insulin. The nurse said that it was important for insulin users and she told the children to get the bigger one, and then she showed me how to cut it. If the nurse hadn't shown it, maybe my finger would have been cut off. That's why when I think of diabetes and insulin, I immediately think of nail clippers. Insulin is a good but difficult thing, I do it twice a day. It doesn't work if it's late, it doesn't work if it's early. We live with it. It would have been nice if they had taught me everything one by one, not insulin. Even cutting a nail was difficult for me. Explain well, my child."

K5: "They didn't tell me well before. I thought I would get better by using insulin for 3-5 days, maybe a month. They never said a lifetime. I barely finished what they gave me, and a little later, I passed out, they took me to the hospital, and then a nurse told me everything, and I was mad at her, how can you inject yourself for life. She told me so, I never wanted it, but I couldn't even say I didn't want it. They passed on to make insulin. Nobody asked me if I want this, what else do I want to do, etc. Wouldn't it be better if they asked me and then started, if they persuaded me by speaking, I would understand better?"

K16 very clearly expressed the importance of nail clippers, the importance of foot care, and especially the priority of education that should be given to the patient in this regard. She emphasized the importance of foot care training

provided by the nurse for herself. K5 explained that from the onset of the disease, he/she should be given a very good education about his/her disease and the process and that he/she had problems with maintaining his/her treatment because no training was given. He/she explained that he/she understood the process after training given to him/her by a nurse. In addition, he/she states that when his/her illness was first detected, he/she was not adequately explained, his/her opinion was not taken, and he/she was not talked to and tried to be persuaded. He/she even emphasizes that it does not go beyond just listing what he/she should do.

> **K1:** *"Nobody told me about the first applications, the doctor wrote the medicine and sent me, and the pharmacist said to do it on my belly and leg… 3-4 years later, a nurse told me one by one, it turned out that I was doing everything wrong. The nurse should first tell each diabetic patient, and then they should give the injection together… until you learn. Wouldn't it be better if they asked me and then started, if they convinced me by speaking, I would understand better?"*

K1 stated that he/she was not told in detail about insulin application, so he/she applied it unknowingly. He/she explained that it would be correct for a nurse to explain the administration of insulin, then to apply it together with the patient, and finally to apply it alone when the patient is now able to do it himself/herself.

> **K7:** *"I got married, we will have a child when we get married, otherwise what will the family say? But in the meantime, we learned that I have diabetes. They told me don't eat it, don't eat this, use insulin…They also said to me what if insulin causes infertility… Imagine if the new bride does not have children, what would happen? That's why I couldn't use it."*

K7 highlights another erroneous information regarding insulin use. She stated that she could not ensure the continuity of her treatment due to false information that insulin would cause infertility.

4.1.2. Craving to Eat

Photo 2: Desserts with no taste
In the photo, there is an image of K5 adding hot peppers to his/her bread, rice pudding, and honey. He/she wanted to express that even all sweets with insulin are bitter.

> **K7:** *"There's bread, pudding, honey, but they all have pepper on top. Some bitters are in my favorites. Is honey bitter? I swear it is. Bread is already prohibited. Rice pudding, sweet, pudding all became bitter with this disease..."*

It is seen that all participants love to eat and want to eat whatever they want. K7, on the other hand, stated that after starting to use insulin, even the taste of the food they ate with the eating bans disappeared, as if the taste of even sweets turned into bitterness.

4.1.3. Injection Administration Issues/Pain

> **K4:** *"Damn it's bad. It hurts and I can't eat or drink what I want. It's not fun at all, you see. But I'm convicted. I'm doomed on insulin. I'm doomed to measure blood sugar. You're a captive. This bondage must end. I don't know how it will end, but I don't want to check blood sugar, give insulin to myself, it is something that hurts…"*

K4 states that administering insulin and measuring blood sugar hurts and does not like it.

> **K13:** *"Insulin is essential. I don't want to do it at all, but my mom used to do it too, and she did it with huge needles. When I think about it, I am very lucky. The needles got smaller, but I wish they got even smaller, or*

disappeared..."

K13 says that when he/she remembers his/her mother's insulin applications, he/she is aware that it is easier to apply because of the shrinking needle sizes, while he/she wants a viable method without using any needles/without hurting.

K17: *It's my needle-rotting arm. It is telling me how hard it is, how painful it is…*"

K17 stated that it is difficult to apply insulin, it hurts, the application rots the arms (there are Ecchymoses).

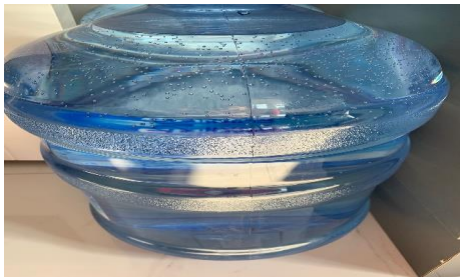## 4.2. Theme 2: Not Being Able to Accept

Photo 3: Not being able to accept and distorted body image
In the photo, K14 explains that after he/she started using insulin, he/she gained weight and started to see himself/herself as a carboy, and this image reflects him/her.

K14: "*… This is exactly how I see myself. I'm already a chubby thing. But now they also insisted that drink water, drink water. I died inside the water. I almost drink all of them in one day. It doesn't finish. I'm swollen like this bottle. I didn't do insulin at first, I didn't want it. I thought I would get used to it and become addicted, they said so. When I don't, my kidneys are spoiled, and I drink bottles of water to make it better, and I never get out of the bathroom. I wish I had done it on time, maybe my kidney would have remained healthy, I would not have been drinking water.*"

K14 states that after being diagnosed with diabetes, he/she is most affected psychologically and still cannot accept that he/she has to use insulin. So much so that he/she expresses ruefully that his/her kidneys were damaged because he/she did not follow the recommendations during the process when his/her acceptance developed.

4.2.1. Distorted Body Image

K11: "*While diabetes rots us, on the other hand, we strive to live… That's why I'm fat. I don't like the way I am. I can't do the diet, sometimes I even say that I should not do insulin for a few months and lose weight. I don't want any, but it doesn't work without it. Like they say it is not loved even if it is a child.*"

K11 tried to convey that using insulin caused him/her to gain weight, he/she was not satisfied with the situation and wanted to lose weight, while K14 tried to convey that he/she also had a problem accepting his/her body image and was not satisfied with his/her new appearance.

Photo 4: Prohibitions and desires
The photo shows grapes that K5 says he/she can't get enough of, loves to eat, wants to eat unlimitedly, but also feels guilty toward his/her family when he/she eats too much.

K5: "*Sometimes I want to eat to the fullest, I also do it secretly. But then I regret it. My spouse and the children get angry. Now I secretly eat, then I don't find it appropriate and I'm ashamed.*"

K5 states that he/she likes to eat very much, that he/she sometimes finds it difficult to control himself/herself and eats secretly. He/she explains that he/she feels ashamed and regrets when his/her family members realize these secret eatings.

4.2.2. Anxiety

Photo 5: Anxiety
The photo shows the tiny injury from K1's foot, which she perceives as frightening.

> **K1:** *"I think that I have a foot where my fingers will be cut off at any moment. Even the tiny redness on my feet seems to take my life away. It's like having a good foot means I'm well. I think that if I do insulin right, I won't get sores on my feet. For a while, my blood sugar was always high, something stung on my feet and it didn't get better for weeks, I lost my sleep."*

In K1's photo, it is seen that there is a very small redness on the little finger of her foot, and there is a shape-wise change in her big toe. While the image here is not frightening, the participant expresses her concern that the rash may cause her foot to be amputated.

4.2.3. Ambivalent Emotions

> **K9:** *"Grapes I can never get enough of. If I eat, my blood sugar rises, I become dependent on someone else. But sometimes I eat and I overdo insulin. It is very difficult during the holiday, not being able to eat baklava while everyone is eating, not being able to eat chocolate makes me angry, I am angry with those who eat it, why are they not sick? I keep saying why me? I always wish I could eat these and make insulin over and over again? There is watermelon, melon... But it's all just a taste. When I look at this photo, I turn against insulin, I get angry."*

K9, besides the fact that eating the things he/she likes makes him/her happy, expresses that he/she cannot eat whatever he/she wants due to his/her illness and that he/she is angry with people who can eat whatever they want. He/she explained that he/she never liked insulin, but he/she couldn't be without it. He/she also emphasized that he/she sometimes eats what he/she wants and finds solutions by increasing the insulin dose.

> **K5**: *"It lets us survive. I didn't use it before; I was going to die. My blood sugar was high and I was in the hospital for days. I even lost myself for a while, I don't remember. See, insulin doesn't kill us, but I'm thinking, is it dying or living like this? Sometimes I want to eat to the fullest, I also eat secretly, but then I regret it. My spouse, and the children are angry. Now I'm secretly eating, then I regret and get ashamed."*

Being aware of the vital importance of insulin for him/her, K5 wanted to explain his/her complex feelings, which he/she tried to express that he/she saw as equivalent to living using insulin and dying without using insulin.

4.3. Theme 3. Anxiety About Losing Control

4.3.1. Awareness

Photo 6: Awareness
In the photo, there is a blood sugar follow-up card, in which K2 states that blood sugar control is vital for him/her and that without this card, he/she cannot follow his/her blood sugar.

K2: *"My blood sugar follow-up card. It always reminds me to be on the alert. I cannot live without insulin. It's like I don't know what I'm doing without this card. Insulin is a tricky thing. You are always on alert, no less, no more. You can make yourself live with it, and you can kill yourself with it."*

K2 states that he/she is aware that if he/she does not monitor his/her blood sugar with this photo or if his/her blood sugar level exceeds the limits, it will cause bad consequences for him/her.

4.3.2. Despair

Photo 7: Despair
In the photo, there are thyme and mints dried out of thirst, with which K10 identifies himself/herself. He states that his/her disease also dehydrates him/her like these plants.

K10: *"This disease dries me up like this, no matter what I do, one day my eyes, one day my kidney, then my brain and my feet, dry them all one by one. I was watering them regularly so I wouldn't dry them. While I was out of the city for a week, folks at home forgot to water it and I found it like this. My water is like insulin, I think that as my blood sugar rises, I go to the toilet and dry out just like that."*

K10 is a patient with diabetes-related renal failure. He/she likens the pot containing dried mint and thyme to himself/herself. He/she explains the importance of water for individuals with diabetes, such as these plants that need irrigation, that he/she knows that life will end for him/her if water consumption is insufficient, and he/she explains his/her anxiety and desperation for this.

4.3.3. Unhappiness

Photo 8: Unhappiness with prohibitions
In the photo, K3 is trying to explain that everything has become forbidden to him by starting the use of insulin.

K3: *"I can't make the other sex happy, I'm ashamed against my spouse, I'm afraid to hold her hands. If she expects anything else from me when I hold her hand ..."*

K3 is a young male patient. He wanted to say through the photo that using insulin prohibits everything, even bans on his sex life. He tried to express his impotence problem by explaining that he was afraid to hold his wife's hand with the use of insulin and that he was worried about not being able to meet his wife's demands in this situation.

4.3.4. Captivity

K4: *"Damn it's bad. It hurts and I can't eat or drink what I want. It's not fun at all, you see. But I'm convicted. I'm doomed on insulin. I'm doomed to measure blood sugar. I am a captive. This bondage must end. I don't know how it will end, but I don't want to check blood sugar and make insulin. It's something that hurts. If it had a pill or something, or just a syrup..."*

K4 is a Ministry of Justice employee, and it is seen that he/she made comments by associating his/her illness with his/her profession. Just as conviction is a challenging situation for humans, using insulin means being condemned

to insulin for this patient and being in its captivity. He/She is emphasizing that captivity cannot be loved and the enslavement is not loved too, and he/she wants to get rid of it as soon as possible.

4.3.5. Regret

> **K14:** *"This disease has made me a thief in my kitchen. I want to take whatever I want out of that fridge and eat it. But I can't. I'm scared and I'm afraid of home folks."*

K14 states that he/she consumes foods that are not suitable for his/her health, and that there is an effort to do this without his/her family members noticing. It shows that he/she has a feeling of regret that his/her behavior has made him/her a thief stealing food in the family.

4.4. Theme 4: Social Issues

4.4.1. Unemployment And Workplace Issues

> **K8:** *"But first I was fired because they said we can't take responsibility if your blood sugar drops… Thank God my spouse is working and my family is always with me. But bringing money into the house is very important. The more I sit at home, the more I eat, my blood sugar rises, I gain weight, etc. I have had negative experiences."*

K8 states that he/she was fired because he/she was sick and the reason for this is that the workplace did not want to take responsibility when he/she experienced a blood sugar imbalance during working hours. Sitting at home without working, leads him/her to inactivity and opens the door to other problems.

> **K2:** *"I got sick, I lost my job, I had no place to put insulin during work. My illness has been my biggest hindrance to work."*

K2 emphasizes that the workplace does not make efforts to come up with solutions for the storage of insulin.

4.4.2. Stigmatization

> **K10**: *"They told me not to use insulin because I could get barren. At first, I was scared, I didn't use it. But now I have three children, I'm not barren or anything like that."*

K10 states that she is stigmatized by the pressure of the people in her social circle as in the photo, that she will become barren, but she is comfortable in understanding that this is not a problem.

> **K7:** *I got married, we would have a child now that we got married, otherwise, what would the family say?... Imagine as a new bride I could not have children, what would happen?"*

K7: She explains that she was worried about the possibility of not having a child after marriage and that she was stigmatized by her environment.

4.5. Theme 5: Fears

4.5.1. Fear of Not Being Self-Sufficient

K9, with his/her comment on his/her photograph, also stated that he/she was aware of the harm that wrongful use of insulin would cause him/her, among many things, and that if he/she did not follow the rules, he/she would become needy and he/she would not be self-sufficient.

5.4.2. Fear of Amputation

> **K16:** *"Diabetes hit my feet. I had sores on my nails and fingers. I was afraid so much."*

It is seen that amputation is the biggest fear for an individual with diabetes, and the risk of amputation especially for the foot causes great fear for K16.

4.5.3. Loneliness

> **K3:** *"These are my insulins, my comrades. But with them, diabetes can't be my comrade. I had to replace the sugar I loved with new companions. These are my new comrades. People are happy when they are with*

their friends. I am also happy when I eat sugary things, sweets. I'm unhappy with insulin."

According to K3, the biggest problem is that he/she has to be separated from his/her loved ones the most. His/her preferred things are foods that are forbidden to diabetics, and how difficult it is to stay away from them. He/she says that he/she tries to love insulin but never does and that it is "loneliness" to be separated from the nutrients he/she loves.

5. DISCUSSION

Both the application of insulin and the acceptance of the application can force the individual. In the study conducted by Allen et al. (2017), it was stated that almost 1/3 of the patients who needed to use insulin did not plan to start using it (Allen et al., 2017). Another study reported that approximately 70% of users had a negative attitude towards insulin (Alomran et al., 2020). Although 58.5% of the patients who stopped using insulin stated that they experienced other adverse events after discontinuation (Soylar et al., 2020), the rate of discontinuation of insulin therapy was reported as 6.2% (Karabayraktar et al., 2017). It is known that the basis of this is the inadequacy of informing the patient about the disease and insulin (Bermeo-Cabrera et al., 2018). Lack of knowledge about diabetes negatively affects individuals' nutrition, exercise, and insulin practices (Akdemir & Birol, 2020).

In the study of Alomran et al (2020), it is explained that men, those between the ages of 35 and 50, those who have not studied at university, those who are in the first 5 years of diabetes diagnosis are at risk of insulin use, cannot use it regularly or are likely to quit (Alomran et al., 2020). Another study, on the contrary, shows that women, those aged >65, are more likely to give up insulin, while the group with low levels of education, and especially those who have not studied diabetes, do not want to use Insulin. When it comes to why individuals do not want to use insulin, it is seen that they have difficulty in administering insulin, problems with dose adjustment, anxiety about being insulin-dependent, fear of stigmatizing, and experiencing/fearing some insulin-related ailments (Soylar et al., 2020).

When individuals were asked why they did not want to use insulin, nearly half of the individuals expressed their concern that insulin would make them worse (Bermeo-Cabrera et al., 2018; Gulam et al., 2017), and 35% expressed their anxiety about gaining weight (Gulam et al., 2017). 7.3% of individuals who use insulin say that they want to lose weight, and for this purpose, they stop using insulin (Falcao & Francisco, 2017). It is stated that especially female diabetics are restless due to their excess weight and their body image is affected more negatively than men (Kaminsky & Dewey, 2014). Although male individuals with diabetes are less affected by being overweight, they also have dissatisfaction with their body images (Toselli et al., 2019). It was determined that the individuals in this study also had problems with lack of knowledge, craving for food, intervention in insulin use for weight control, and injection application. It should not be forgotten that it is important for all diabetics to be informed in detail about their disease, treatment, nutrition, and insulin administration by nurses.

It is also stated that using insulin creates the appearance of not being able to cope with the disease through oral drugs and exercise, and it is avoided because it is ashamed to administer insulin (Gulam et al., 2017). Both this sense of shame and the inability to plan their daily activities due to their illness makes patients feel unhappy (Bermeo-Cabrera et al., 2018). It is stated that the patients are worried about losing their self-control due to not only being able to plan their daily life, but also not being able to live their day with the flexibility they want, giving up the activities they want, and having to use a certain amount of insulin daily for the continuation of their life. 55% of individuals are worried that they will give up their independence and become dependent on a doctor by using insulin (Gulam et al., 2017) and think that it will make their lives more difficult (Alomran et al., 2020). In addition, fear of injection (Gulam et al., 2017), pain at the injection site (Alomran et al., 2020; Bermeo-Cabrera et al., 2018; Gulam et al., 2017), and post-injection bruising at the injection site lead individuals away from insulin administration (Alomran et al., 2020). In this study, it is seen that patients have problems adapting to treatment, applying injections, they are aware of their situation, but they have problems in following the rules and regret it afterward, and this is perceived as making them feel unhappy and helpless, and it seems like they are condemned to insulin. Here, it can be said that patient education is important and there is a possibility that they may not have received enough training.

While social issues are generally evaluated within the scope of stigmatization, the anxiety of being stigmatized as "infertile" may come to the fore. It is a problem that is thought to cause infertility in male patients due to the physiological effects of diabetes. However, it is emphasized that this issue should be investigated in detail (Glazer et al., 2017; Stefan & Temidayo, 2018). It is known that 89.6% of patients diagnosed with diabetes do not start using insulin for different reasons and seek solutions in alternative methods (Allen et al., 2017). The rate of stigma anxiety with insulin use in patients receiving services in primary care has been reported as 58.2% (Alomran et al.,

2020). In one of the studies conducted with individuals using insulin, the rate of individuals using insulin who experienced negative sexual outcomes was 7.2% (Bermeo-Cabrera et al., 2018). In this study, it is seen that individuals have anxiety about being stigmatized as "infertile". It is a fact that the whole society needs to be aware of diabetes to prevent these.

Using insulin can cause unemployment as well as social stigmatization. Employers think that individuals who use insulin may experience both losses of the workforce due to illness and safety problems (Gerbo et al., 2019; Ruston et al., 2013). A study conducted in the United States explains that the fact that an employee has diabetes can be considered as an occupational safety problem, and it is stated that the problem will be solved by employing these people in safe areas and can be maintained without employment problems (Gerbo et al., 2019). Awareness of the employer or manager is said to be important for the diabetic individual to suffer from workplace or employment problems (Ruston et al., 2013). Like employer awareness, patient awareness is also very important for individuals using insulin. The individual may perceive himself/herself as inadequate to carry out the process by failing to learn/misapplying insulin administration (Alomran et al., 2020). In the process of using insulin, the necessity of changing the flow of life, the responsibility of exercising, some limitations that need to be brought to work, and social life increase the responsibility of people for their health (Bermeo-Cabrera et al., 2018). The limits that should be imposed on social life can also cause the individual to become isolated (Alomran et al., 2020). In this study, it has been determined that individuals experience unemployment and workplace-related problems (e.g., not providing insulin storage conditions, etc.). In this regard, it can be recommended to make arrangements regarding the legal legislation and to inform the whole society and employers.

6. CONCLUSION

For people with diabetes, insulin means craving for food, deterioration in body image, further deterioration of health, anxiety about losing control, desperation, and unhappiness due to prohibitions. Individuals use insulin not voluntarily, but out of necessity. The reason for not wanting to use it is the stigmatization, problems with the workplace, the thought of causing weight gain, the possibility of not being self-sufficient due to the risk of hypoglycemia, and the painful application.

7. SUGGESTIONS

It can be suggested that nurses give detailed training to individuals with diabetes on how to provide diabetes self-management, ensure continuity of education, including information about misperceptions about insulin in training, inform the whole society about diabetes and individuals with diabetes, and inform employers about what should be done for employees with diabetes. It may be appropriate to conduct randomized controlled studies to evaluate the effects of health education given to individuals with diabetes by nurses on insulin use and perceptions of insulin use in patients. It is important for nurses to undertake the health education of patients and society and to be aware of these responsibilities.

Limitations of the Study

Due to the COVID-19 process, conducting in-depth individual interviews online and including those with internet access are the limitations of the research.

Disclosure Statement

No potential conflict of interest was reported by the author(s)

REFERENCES

Akdemir, N., & Birol, L. (2020). İç Hastalıkları ve Hemşirelik Bakımı. _Güncellenmiş 5. Baskı_, _Akademisyen Kitabevi, Ankara_. https://doi.org/Bİas Coce: MED058000

Akkaya Kozak, D., Bahar, N. T., Ay, F., Kılıç, Barış, & Özgün Başıbüyük, G. (2021). Türkiye'de ileri yaştaki yetişkinlerin düşme durumları. _Antropoloji_. https://doi.org/10.33613/antropolojidergisi.810773

Allen, N., Zagarins, S., Feinberg, R., & Welch, G. (2017). Treating psychological insulin resistance in type 2 diabetes. _Journal of Clinical & Translational Endocrinology_, 7, 1-6. https://doi.org/http://creativecommons.org/licenses/by-nc-nd/4.0/

Alomran, A., Almubarak, D., Alrashed, B., & Khan, A. (2020). Psychological insulin resistance among type 2 diabetic patients attending primary healthcare centers, Al-Ahsa, Saudi Arabia. _Journal of Family and Community Medicine_, 27, 192-199. https://doi.org/0.4103/jfcm.JFCM_226_20

ANA. (2021). Diabetes. https://doi.org/https://www.diabetes.org/diabetes. Erişim tarihi: 12.01.2021

Arastaman, G., Öztürk Fidan, İ., & Fidan, T. (2018). Nitel Araştırmada Geçerlik ve Güvenirlik: Kuramsal Bir İnceleme. *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, *15*(1), 37-75. https://doi.org/10.23891/efdyyu.2017.61

Arda Sürücü, H., & Samancıoğlu, S. (2018). Tip 2 Diyabetli Bireylerde Negatif İnsülin Tedavi Algısının Yordayıcıları. *Turkiye Klinikleri J Nurs Sci*, *10*(2), 130-137. https://doi.org/0.5336/nurses.2018-60403

Baltacı, A. (2017). Nitel Veri Analizinde Miles-Huberman Modeli. *Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *3*(1), 1-15. https://doi.org/https://dergipark.org.tr/en/download/article-file/318527

Baltacı, A. (2018). Nitel Araştırmalarda Örnekleme Yöntemleri ve Örnek Hacmi Sorunsalı Üzerine Kavramsal Bir İnceleme. *Bitlis Eren Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *7*(1), 231-274.

Baltacı, A. (2019). Nitel Araştırma Süreci: Nitel Bir Araştırma Nasıl Yapılır? *Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *5*(2), 368-388. https://doi.org/0.31592/aeusbed.598299

Bermeo-Cabrera, J., Almeda-Valdes, P., Riofrios-Palacios, J., Aguilar-Salinas, C. A., & Mehta, R. (2018). Insulin Adherence in Type 2 Diabetes in Mexico: Behaviors and Barriers. *J Diabetes Res*, *2018*, 3190849. https://doi.org/10.1155/2018/3190849

Bullard, E. (2018). Photovoice. *Salem Press Encyclopedia*. https://doi.org/http://eds.a.ebscohost.com/eds/detail/detail?vid=0&sid=32a4450f-4cb0-496c-b76a-59bfaa6dd070%40sessionmgr4006&bdata=Jmxhbmc9dHImc2l0ZT1lZHMtbGl2ZQ%3d%3d#AN=109057118&db=ers. Erişim tarihi: 13.01.2021

Can Çiçek, S., Arıkan, F., Can, Ş., Dalkıran, F., & Ankaralı, H. (2021). Diyabetli Bireylerde Tamamlayıcı Tedavi Kullanımı ve Bilgi Kaynakları. *Türk Fen ve Sağlık Dergisi*, *2*(1), 92-103. https://doi.org/https://dergipark.org.tr/tr/pub/tfsd

Creswell, J., & (Çeviri Editörü: Sözbilir, M. (2017). Introduction to Mixed Method Research. *Pagem Akademi, Ankara*(1 st edition), s. 13-63.

Cypress, B. S. (2017). Rigor or Reliability and Validity in Qualitative Research: Perspectives, Strategies, Reconceptualization, and Recommendations. *Dimens Crit Care Nurs*, *36*(4), 253-263. https://doi.org/10.1097/DCC.0000000000000253

Çetin, İ., Mert, K., & (Editör: Sevil, Ü. D. B., Ö.). (2018). Fotoses Tekniği ile Nitel Hemşirelik Araştırmalarında Yenilikçi bir Yaklaşım/ Hemşirelik ve İnovasyon. *Güven Plus Grup A.Ş. Yayınları, İstanbul*, *1. Baskı*, 83-104.

Evans-Agnew, R. A., Boutain, D. M., & Rosemberg, M. S. (2017). Advancing Nursing Research in the Visual Era: Reenvisioning the Photovoice Process Across Phenomenological, Grounded Theory, and Critical Theory Methodologies. *ANS Adv Nurs Sci*, *40*(1), E1-E15. https://doi.org/10.1097/ANS.0000000000000159

Falcao, M. A., & Francisco, R. (2017). Diabetes, eating disorders and body image in young adults: an exploratory study about "diabulimia". *Eat Weight Disord*, *22*(4), 675-682. https://doi.org/10.1007/s40519-017-0406-9

Gerbo, R. M., Jin, C. F., & Clark, K. (2019). Diabetes in the Workplace: the Hazards of Hypoglycemia. *Curr Diab Rep*, *19*(11), 119. https://doi.org/10.1007/s11892-019-1234-2

Glazer, C. H., Bonde, J. P., Giwercman, A., Vassard, D., Pinborg, A., Schmidt, L., & Vaclavik Brauner, E. (2017). Risk of diabetes according to male factor infertility: a register-based cohort study. *Hum Reprod*, *32*(7), 1474-1481. https://doi.org/10.1093/humrep/dex097

Gulam, A. H., Cf Otieno, F., & Oyoo, G. O. (2017). Prevalence of Psychological Insulin Resistance among Patients with Type 2 Diabetes at Kenyatta National Hospital, Kenya. *Health Science Journal*, *11*(3). https://doi.org/10.21767/1791-809x.1000508

Holmes-Truscott, E., Browne, J. L., Ventura, A. D., Pouwer, F., & Speight, J. (2018). Diabetes stigma is associated with negative treatment appraisals among adults with insulin-treated Type 2 diabetes: results from the second Diabetes MILES - Australia (MILES-2) survey. *Diabet Med*, *35*(5), 658-662. https://doi.org/10.1111/dme.13598

Holmes-Truscott, E., Pouwer, F., & Speight, J. (2017). Assessing Psychological Insulin Resistance in Type 2 Diabetes: a Critical Comparison of Measures. *Curr Diab Rep*, *17*(7), 46. https://doi.org/10.1007/s11892-017-0873-4

Jeong, H., & Othman, J. (2016). Using Interpretative Phenomenological Analysis from a Realist Perspective. *The Qualitative Report*, *21*(3), 558-570. https://doi.org/https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=2300&context=tqr

Kaminsky, L. A., & Dewey, D. (2014). The association between body mass index and physical activity, and body image, self esteem and social support in adolescents with type 1 diabetes. *Can J Diabetes*, *38*(4), 244-249. https://doi.org/10.1016/j.jcjd.2014.04.005

Karabayraktar, T., TekİN, B., TekİN, S., & Sargin, M. (2017). The Rate of Insulin Nonpersistence Among Patients with Type II Diabetes Who Were First Started on Insulin Treatment. *Turkiye Klinikleri Journal of Medical Sciences*, *37*(3), 124-129. https://doi.org/10.5336/medsci.2017-55949

Leung, A. Y. M., Chau, P. H., Leung, I. S. H., Tse, M., Wong, P. L. C., Tam, W. M., & Leung, D. Y. P. (2019). Motivating Diabetic and Hypertensive Patients to Engage in Regular Physical Activity: A Multi-Component Intervention Derived from the Concept of Photovoice. *Int J Environ Res Public Health*, *16*(7). https://doi.org/10.3390/ijerph16071219

Mount, M. (2020). P73 Dietetics Experiential Learning at Diabetes Camp: Findings through Photovoice & Qualitative Analysis. *Journal of Nutrition Education and Behavior*, *52*(7), S50-S51. https://doi.org/10.1016/j.jneb.2020.04.119

Mumcu, C., & İnkaya, B. (2020). WEB tabanlı eğitim ile diyabet öz bakım yönetimi. *Acta Medica Nicomedia*, *3*(2), 88-91. https://doi.org/https://dergipark.org.tr/en/download/article-file/1171007

O'Brien, B. C., Harris, I. B., Beckman, T. J., Reed, D. A., & Cook, D. A. (2014). Standards for reporting qualitative research: a synthesis of recommendations. *Acad Med*, *89*(9), 1245-1251. https://doi.org/10.1097/ACM.0000000000000388

Ruston, A., Smith, A., & Fernando, B. (2013). Diabetes in the workplace - diabetic's perceptions and experiences of managing their disease at work: a qualitative study. *BMC Public Health*, *13*, 386. https://doi.org/10.1186/1471-2458-13-386

Sanders, C. (2003). Application of Colaizzi's method: interpretation of an auditable decision trail by a novice researcher. *Contemp Nurse*, *14*(3), 292-302. https://doi.org/10.5172/conu.14.3.292

Soylar, P., Kadioglu, B. U., & Kilic, K. (2020). Investigation of the barriers about insulin therapy in patients with type 2 diabetes. *Niger J Clin Pract*, *23*(1), 98-102. https://doi.org/10.4103/njcp.njcp_138_19

Sönmez, V., & Alacapınar, F. (2018). Örneklendirilmiş Bilimsel Araştırma Yöntemleri. *Anı Yayıncılık*, *Ankara*(Genişletilmiş 6. Baskı), 320-328.

Stefan, S. P., & Temidayo, S. (2018). Diabetes mellitus and male infertility. *Asian Pacific Journal of Reproduction*, *7*(1). https://doi.org/10.4103/2305-0500.220978

TCSağlıkBakanlığı. (2019). Diyabet Tedavi ve İzlem Klinik Protokolleri (Versiyon 1.0). *TC Sağlık Bakanlığı Tedavi Hizmetleri Genel Müdürlüğü Sağlık Teknolojisi Değerlendirme Dairesi Başkanlığı*, 2-101. https://doi.org/https://sbu.saglik.gov.tr/Ekutuphane/kitaplar/Diyabet%20Tedavi%20ve%20%C4%B0zlem%20Klinik%20Protokolleri.pdf#page=10

Toselli, S., Gualdi-Russo, E., & Campa, F. (2019). Ethnic differences in body image perception in patients with type 2 diabetes. *J Hum Nutr Diet*, *32*(3), 356-371. https://doi.org/10.1111/jhn.12606

WHO. (2020). Global research on coronavirus disease (COVID-19). *Erişim tarihi: 28.04.2020*. https://doi.org/Erişim adresi: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov

WHO. (2021). Global Action Plan for the Prevention and Control of NCDs 2013-2020. https://doi.org/https://www.who.int/publications/i/item/9789241506236. Erişim tarihi: 12.01.2021

Yi-Frazier, J. P., Cochrane, K., Mitrovich, C., Pascual, M., Buscaino, E., Eaton, L., Panlasigui, N., Clopp, B., & Malik, F. (2015). Using Instagram as a Modified Application of Photovoice for Storytelling and Sharing in Adolescents With Type 1 Diabetes. *Qual Health Res*, *25*(10), 1372-1382. https://doi.org/10.1177/1049732315583282