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Araştırma Makalesi/ Research Article

Insulin Pump Meaning for Children with Type 1 Diabetes: Phenomenological Research

İnsülin Pompasının Tip 1 Diyabetli Çocuklar İçin Anlamı: Fenomenolojik Bir Araştırma

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ABSTRACT

Objective: The purpose of this qualitative study is to reveal the insulin pump experiences of children with Type 1 Diabetes by examining them in depth.

Methods: Within qualitative research, using the technique of purposive sampling in 14 children with Type 1 Diabetes. Use of an insulin pump at the age of 12-14 was included in the study. Interview technology was used with semi-interviews. The views and lives that can be achieved with this technique have been determined. The obtained data thematic analysis method, computer-aided qualitative data analysis MAXQDA 2022 were analyzed by the program.

Results: In this study; the main themes were 'the definition and meaning of the pump for children', 'children's experiences with the insulin pump', 'what the pump makes children feel', 'changes in children's lives after the pump' and 'expectations, dreams and suggestions about diabetes'. For children, the insulin pump is associated with the concepts of life, comfort, normality, freedom and hope.

Conclusions: What the insulin pump means for children: It is a device that they have to carry with them at all times and depend on to perform their organ functions. They stated that life was difficult and irregular without an insulin pump, and that the pump made daily life easier. They also stated that thanks to the pump, they became independent in their daily lives, but from time to time they experienced problems such as size and clogging problems with the device, and that they were subjected to stigmatization at school.

Keywords: Diabetes, children, qualitative research, insulin pump, nurse

ÖZ

Amaç: Bu nitel çalışmanın amacı; tip 1 diyabetli çocukların insulin pompa deneyimlerini derinlemesine inceleyerek ortaya koymaktır.

Yöntem: Niteliksel araştırma kapsamında amaçlı örnekleme tekniği kullanılarak tip 1 Diyabetli 14 çocukta gerçekleştirilmiştir. Çalışmaya 12-14 yaşlarında insulin pompası kullananlar dahil edildi. Yarı yapılandırılmış görüşme tekniği kullanılmıştır. Bu insülin ile bireylerin görüş ve deneyimleri belirlenmiştir. Elde edilen veriler tematik analiz yöntemiyle, bilgisayar destekli nitel veri analizi MAXQDA 2022 programıyla analiz edilmiştir.

Bulgular: Bu çalışmada; 'çocuklar için pompanın tanımı ve anlamı', 'çocukların insulin pompası ile deneyimleri', 'pompanın çocuklara hissettirdiği', 'pompa sonrası çocukların hayatındaki değişiklikler' ve 'beklentiler, hayaller ve diyabetle ilgili öneriler' ana temaları bulunmuştur. Çocuklar için insulin pompası hayat, rahatlık, normallik, özgürlük, umut kavramları ile ilişkilendirilmiştir.

Sonuç: İnsülin pompasının çocuklar için anlamı; sürekli yanlarında taşımak zorunda oldukları, organ fonksiyonlarını yerine getirmek için bağlı oldukları bir cihazdır. İnsülin pompası olmadan yaşamın zor ve düzensiz olduğunu, pompanın günlük yaşamı kolaylaştırdığını ifade ettiler. Ayrıca pompa sayesinde günlük yaşamlarında bağımsız olduklarını ancak zaman zaman cihazda boyut, tıkanma sorunu gibi sorunlar yaşadıklarını, okulda damgalanmaya maruz kaldıklarını aktardılar.

Anahtar Kelimeler: Diyabet, çocuklar, nitel araştırma, insulin pompası, hemşire

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Introduction

Type 1 diabetes is an important disease that is mostly seen in childhood and young adults and has chronic, biological, psychological, and social effects (de wit et al., 2020). The International Diabetes Federation (IDF) reported that 537 million adults (20-79 years) are living with diabetes. This number is predicted to rise to 643 million by 2030 and 783 million by 2045 (IDF, 2021). In a national-scale study conducted in 2014 on the prevalence of type 1 diabetes, the prevalence in the 0-18 age group was reported as 75/100,000 (Yeşilkaya et al., 2017). Since type 1 diabetes usually occurs as a result of beta cell destruction, insulin pump therapy is a frequently used method in type 1 diabetics (Katsarou et al., 2017). Many studies have reported that there are compliance problems with insulin injections and that good metabolic control is important to prevent the development of possible microvascular complications and that the insulin pump is an alternative treatment method to multiple daily insulin injection therapy for the adolescent age group. By demonstrating that the use of insulin pumps is effective, reliable and provides better metabolic control, there has been a significant increase in the frequency of use in recent years, especially in pediatric patients (Szypowska et al., 2016). Among the disadvantages of the insulin pump is its image change. For example, constant use of equipment may negatively affect the sense of independence in adolescents (Buğrul et al., 2016). The reason why children with type 1 diabetes were chosen between the ages of 12-14 is that 12-year-old children are competent in abstract operations and adolescence has begun. They can make assumptions and draw logical conclusions. It can systematically solve complex problems, whether presented in concrete or abstract form (Doğan, 2007). Based on this information; the purpose of this qualitative study is to reveal the insulin pump experiences of children with type 1 diabetes by examining them in depth. This study is the first to reveal the experience of children with type 1 diabetes using insulin in Turkey and to include what it means for children in their own words.

Methods

A phenomenological pattern which is one of the qualitative research methods was carried out. Sample were determined by the sampling technique as the purposive sampling method. The study protocol was approved by the Izmir Katip Çelebi University Non-Interventional Ethics Committee (21.01.2021, Num:0020). Since children are under the age of 18, consent was obtained from the families. The criteria to be included in the study; use an insulin pump with tip 1 Diabetes, willing to participate in the research (with parental permission), is to be between the ages of 11-14 because of Piaget's concrete thinking (Doğan, 2007). The interviews continued until saturation was reached (Tekindal and Arsu, 2020). In line with this, a total of 14 people were interviewed.

The research was conducted between December 2019 and June 2021. The interviews were semi-structured, in-depth interviews carried out using the online platform Zoom. Table 1 includes participant information (Table I). Criteria of validity and reliability of qualitative research which Qualitative Research Reporting Standards (SRQR) was used (Tekindal et al., 2021). Most of the interviews were conducted in the evening or on Sundays, at times convenient for children and families. First, permission was obtained from the families, and then the children were interviewed. In more than half of the cases, children are accompanied by their families. The interview duration lasted a minimum of 8 minutes and a maximum of 25 minutes. The semi-structured interview form consists of 17 questions.

Data Analysis

Recorded transcripts of online discussions after a content thematic analysis was conducted. When analyzing, first the code after it is created, the code became the theme. The obtained data thematic analysis method, computer-aided qualitative data analysis MAXQDA 2022 were analyzed by the program.

Results

As a result of the analysis were found five themes. These themes were 'definition and meaning of the pump for children', 'children's experiences with the insulin pump', 'How the pump makes children feel', 'Changes in the lives of children after the pump' and 'Expectations, dreams and suggestions with diabetes'.

1. The First Main Theme: Definition and Meaning of The Pump for Children: Life

For the children, the pump represents being a part of themselves, being a friend, life, comfort, and normality. *"It's very important to me, it's like a part of my life."* (P3) and *"For me, it is like my external organ. Without it, I would be incomplete."*(P10), the

Children stated that the pump was *"... very precious..."* (P1) for them. They also mentioned that the pumps were their friends by saying *"...like a friend of mine, ... it's with me wherever I go, whatever I do* (P3). While the insulin pump normalizes the life of children *("It normalizes my life a little more."* (P1*)*, it has considered as a device for *"... not giving injections, ... living comfortably".*

As you can see, the pump represents life for children, so it becomes indispensable. Therefore, the meaning and value of the pump is important.

While making a definition on this point, the children made explanations about what their life was like or what it would have been like in case there was no pump. They expressed that life without the pump was or would be *painful, bad, difficult, irregular and insecure.*

The children expressed how difficult their previous life, i.e. the life without a pump, was by saying:

"My diabetes would have been more irregular; it would have damaged my organs." (P14*). "... It would be pretty hard ..."* (P2 and P6), *"... It would be worse than my current life... I hated the injection at night, it was burning"* (P4*), "... I was hurting all the time, it was hurting from getting blood drawn"* (P13 and P10), *"I would have suffered more."* (P7).

They also stated that without the pump, diet restrictions were much more and their self-confidence was affected accordingly, by saying.

"I couldn't eat comfortably; I would have to give injections all the time." (P1, P6, P13)

In the first main theme, in summary, it was revealed that the children started out from their bad experiences when describing the pump and expressing the life without pump.

2. The Second Main Theme: Children's Experiences with The Insulin Pump

Children have been exposed to positive and negative experiences in their lives with the pump.

Positive Aspects of The Pump: Independence

The children replied all questions by explaining the positive aspects of the pump by making sentences similar to the examples above. The children stated that it increased the responsibilities of individuals and enabled them to act as independent individuals.

"... I used to send the information about the diet to my father for his calculation, ... now I can calculate what I eat myself, "You don't have to carry an insulin pen everywhere, you don't look for a refrigerator in order to keep the insulins [your insulin injections] intact." (P14), *"If my [blood] sugar drops when I walk a long way, I can adjust it myself, it gives me an alert"* (P11).

Negative Aspects of The Pump: Device Appearance and Faults

When the children were asked about the negative aspects of the pump, they stated that the pump set was big and caused blockages.

"It looks too big... it is obvious [from the outside] and a bit big." (P1*), "... on the clothes... it creates bumps. ... It doesn't look nice"* (P6), *"... when my set is clogged, this time my blood sugar doesn't go down. ... I may have to go to the hospital"* (P1 and P9).

It was observed that the adolescent diabetics, who were in the period when they attached more importance to their appearance, emphasized the size of the pump and the appearance from the outside. The other negative side of the pump was that the set clogged, resulting in health problems.

Social Life with The Pump: Exposure to Questions

The children stated that the pump had a positive effect on their school life, but they were occasionally asked and exposed questions about it.

"I didn't have to carry the insulin injection and calculate the insulin.", "I had to bring an injection, insulin to school... I didn't want to inject insulin outside, so I wanted to stay at home all the time." (P9 and P11)

While expressing the positive aspects of pump with the expressions above, similarly, they also referred to the negative aspects with the following statements.

"I had to explain it to my friends, ... my teachers thought it was a phone or something... so they got angry... I explained it." (P2), *"Regarding me, they said that I had Type 1 diabetes, so I used this."* (P11), "*The little children said 'aaaa what did sister wear?' They were saying something like that... They were afraid... I was the only one with diabetes in the school. The little ones were a little afraid of me."* (P13).

The children stated that they sometimes faced negative situations. Tired of the aforementioned explanations and curiosities, *"I'm an agent or something like that... and I'm sending them away... there are still people asking this"* (P3)

Table 1. Participant Information

Participant	Age	Gender	Diagnosis Date	Duration of Insulin Pump	City	Interview Time (min/sec)	Interview Date
1	13	Female	2017	2 years	İzmit	20.17	09. 05.2021
2	14	Female	2019	1,5 years	Ankara	18.22	10. 05.2021
3	12	Female	2014	4 years	İzmir	25.52	22. 05.2021
4	12	Male	2017	1,5 years	İzmir	17.29	29. 05.2021
5	14	Female	2012	3 years	Ordu	15.55	15.05.2021
6	13	Female	2017	1.5 years	Ankara	12.28	29.03.2021
7	12	Female	2013	7 years	Sivas	13.53	04.04.2021
8	13	Female	2015	4 years	İzmir	13.09	12.04.2021
9	13	Male	2017	3 years	Sakarya	12.06	12.04.2021
10	12	Female	2017	3 years	İzmir	18.15	13.04.2021
11	12	Female	2017	3 years	Ankara	8.35	13.04.2021
12	13	Male	2010	8 years	İzmir	15.20	14.04.2021
13	12	Female	2016	6 months	İzmir	13.10	14.04.2021
14	13	Male	2016	1 years	İzmir	15.11	14.04.2021

Regarding the social life with the pump, the children especially talked about their school life and friendship relations. They stated that they did not want to go out of the house because they had to carry insulin injections to school or because they were afraid that others would see them while giving the injection. This showed that the child was socially isolated without the pump. It was seen that children were bored in the face of questions, and they brought different solutions to people's curiosity. They had to explain about diabetes at school or had been labeled with their illness. They thought that this problem would be reduced by providing an education to schools and raising the awareness of teachers and students.

When the children were asked about their friendship with the pump, they stated that they were happy because they did not feel alone with their other friends using the pump. They mentioned that the pump was effective in making friends. *"I made more friends thanks to the pump; I was happy with them because they were like me." "I am happy that I am not alone, that there are really many people like me around."* (P4 and P7).

In fact, they stated that their friendship relations were also different by saying *"I feel my friends who use pumps different from my other friends. I feel more special."* (P4 and P7)

Children with diabetes who used the pumps mentioned that their friends were worried about them and that they paid attention to what they eat so that they did not get hurt.

They stated that their friends were worried about illness as follows:

"…They get worried when I say my [blood] sugar has dropped …" (P2), *"Let my sugar drop in the slightest way, almost everyone told me 'You pale (turn white), are you okay, should we call the nurse, should we buy something from the canteen?... if they eat something next to me, they tell me to eat somewhere else if I feel like it"* (P3), "They become anxious and worried." (P10).

Adolescent children care about the opinions of their friends, they want to be owned and to be in a group. As it can be seen in the study, the children mentioned their relationships with their friends and their opinions, especially in school life.

3. The Third Main Theme: How the Pump Makes Children Feel: Tension with Freedom

The pump gave children positive feelings. The biggest reason why they experienced these feelings was related to the fact that they did not feel pain after the pump whereas they suffered before the pump. Thinking that there was a solution to their illness with the use of the pump made the children feel good, inspired hope to them, kept them alive and gave them freedom and comfort.

"…I was super happy when I heard that there was a pump, … I felt like there was a solution" (P1), *"… I was giving injections a lot, I was so hurt, and*

now I felt like crying at even the smallest thing, and this was a really scary situation, ... so it means a lot to me" (P3), *"...I feel a little freer."* (P7).

Before the pump, Type 1 diabetes patients, who were in the younger age group, were exposed to insulin injection every day, which was a childhood fear. However, they did not have to give themselves an injection after the pump was installed. Thus, the children stated that they did not suffer every day and that it was good for them.

How The Check-Up at The Hospital Makes Children Feel: Tension

Whereas the hospital control made some children feel tension, it eliminated the feeling of loneliness in some children when they saw other children with the same disease as themselves. The reason why children felt tension (P3) and bad was that they remembered that they had diabetes and had to be hospitalized due to the complications they experienced in the past.

"There are also children who use the pumps like me, ... I even had friends whom I met at the hospital and who used pumps. ... I don't feel alone there." (P7)

On the contrary, the similar age groups also made some negative statements:

"I don't like hospitals, I feel bad, ... I spent my childhood in hospitals" (P11), "*I remember being a diabetic at the hospital"* (P9).

When diabetes is first encountered, the individual feels that the current illness only happens to him/her. Although the children went to the hospital, they felt that they were not alone and started to move away from this feeling. Children, who went to the hospital only when they were sick, had to face these memories again when they went to the hospital, including for a check-up.

4. The Fourth Main Theme: Changes in The Lifes of Children After the Pump: The Disappearance of Embarrassment

'I had to hide while I was giving my injection in the canteen.'

Whereas the children experienced the feeling of embarrassment and hiding before the pump, they expressed that this situation terminated after the pump. In addition, they had the opportunity to eat their favorite food by changing the meal order with the pump.

"In case I ate the slightest thing, I had to give an injection right away. This was affecting me very badly, ... I was really in a bad psychological state for a while, I threw chocolate in my mouth and did not give injections, ... this was after the first pump was installed." (P3), "*When I was at school, the parents brought something that I could not eat. ... It's not like that anymore, now I can even eat something from the canteen whenever I want."* (P5)

The expressions of the children, who feel uncomfortable when giving injections or seeing the insulin injection mark by their friends or acquaintances in their social life, are as follows:

"While I checked my [blood] sugar at school, they were looking at me, ... I had to hide when I had my insulin shot in the canteen while I was eating ... I used to open my belly and my arm, but now I pretend to look at the phone, my insulin is going fast." (P1), "*I can swim comfortably. Previously, when I gave an injection, I had a scar (mark) on my stomach and I was very ashamed of it."* (P3).

Considering that the period of children's age groups was a period when they gave a great importance to their appearance and friends, it was observed that hiding the insulin injection, the responsibility of carrying it throughout their education life, having the empowerment to inject themselves, feeling pain, feeling ashamed of their friends were minimized thanks to the pump.

5. The Fifth Main Theme: Expectations, Dreams and Suggestions with Diabetes

The children made recommendations to children using the pump regarding the useage of pump, diet and the necessity of using pumps. As a diet recommendation, they emphasized that they should pay attention to their diet even if the pump was installed.

"Don't eat everything just because the pump is installed. If you do, bloodD sugar will rise and your kidneys and heart will be damaged" (P4), *"Let them pay attention to eating."* (P11).

"It looks like we have a more troublesome illness with insulin injections from the outside, so the pump is a comfortable thing" (P2), *"They may be prejudiced, ... that the little child cannot use it, etc... should not think like that. ... we really need it, it helps us a lot..."* (P5), *"You can eat anything you want. Everything is at your fingertips: you just have to learn and know it"* (P10).

In their recommendations, the children also mentioned the meal order and diet and emphasized the importance of education on this subject.

The children also made recommendations to families using pumps. In their recommendations, they asked families for tolerance, understanding, and not to panic.

"My mother thinks diabetes is my life. Before the question of 'how are you', she asks 'what is your

blood sugar'." (P6), "They should approach their children with tolerance." (P12*), "Don't do panic." (P10), "They should teach their children to use the pump. Because a child cannot stay with his/her family forever"* (P9).

The children stated that their families constantly asked what blood sugar is or whether they were hungry, causing them to feel different from normal children. Therefore, they requested the families to approach children with less panic and more understanding.

At the same time, with regard to their requests for the treatment process, the children asked that they not be treated as patients and not discriminated against from other children.

In this regard, the expressions of the children were as follows:

"Families should not discriminate to them or do similar things." (P4), "*They should not look at me as a patient, I do not think of it as an illness."* (P5), "*Let them not exaggerate, ... in the family environment, saying 'my dear, you are very strong, you will get through this', etc., ... please don't do this, ... don't let someone else do it, it's a very bad thing."* (P6).

Children asked both their families and relatives not to treat them like a patient, to be treated like a normal person, and to avoid exaggerated behaviors.

When the children were asked how they requested the appearance of the pump, they said that they wanted it to be small.

"The pump could have been a little smaller, it looks a little bit from the outside." (P1 and P9), "I would like it not to be seen, ... to be invisible." (P4 and P10), "*I would like it not to be visible on the clothes and I wish it didn't fall"* (P6).

Considering that the period of children's age groups was a period when they attached importance to external appearance, it was normal for children to be obsessed with the appearance and size of the pump. Accordingly, their request was that the pump size was small and even invisible.

The children also talked about their dreams, their dream jobs or what they would do in 10 years and shaped them according to their diabetes.

"Open a patisserie, for normal people and diabetics." (P3)

"I want to be endocrine the doctor." (P10 and P7)

"I will study genetic engineering... So that, I will prevent diabetes." (P6)

In their dreams, the children made plans by adding diabetes in their professional career choices. They often took medical doctors or similar professions as role models in order to treat their illness.

Discussion

Insulin pumps, blood glucose result in life by providing meals and exercise to reduce fluctuations in day gives the advantage of flexibility in the individuals (Tosun and Kadiroğlu, 2016). The children have problems in diet with diabetes due to their childhood. Because the individuals who influence children's lives are friends rather than family in their school life and friendships are very important for the children. During this period, it was determined that children with diabetes did not comply with their diets when faced with peer pressure in social life (Tosun and Kadiroğlu, 2016; Altundağ, 2018) and considering that they were a group that cared about activities in social life, they also expressed the advantages and disadvantages of exercises and swimming. Among the negative aspects, hyperglycemia may develop as a result of blockage of the infusion set (Lowa et al., 2005). The children's experiences in school life, they especially emphasized being able to eat with their friends and providing diet flexibility. For the children, using an insulin pump could create a constant feeling of dependency on a device, so the families and health professionals should support children for this point (Altundağ, 2018). While talking about this support in the requests of the children during the treatment process, the expressions of the children who had problems in being dependent on the device were included. Similar to our study conducted in 2005 on the use of insulin pumps in young adolescents with Type 1 diabetes (Lowa et al., 2005). This study reveals the pump experiences of adolescents and their families and the children mentioned that their blood sugar levels were regulated with the pump, that they were satisfied with the pump, that it provided convenience in terms of social interaction, that it increased flexibility in the diet, that they did not have to carry injectors, and that they could take their own responsibilities in diabetes management. Similarly, some problems related to body image, appearance or social aspects of pump dependency, they (i) experienced fear of dropping the pump during sports activities, (ii) faced difficulties in the environment with pump alarms, (iii) had health problems as a result of pump failures (breaks), (iv) were tired of having to explain their illness and problems in school and friend life, and (v) the girls had clothing and fashion problems, and (vi) had discomfort during sleeping and exercises. They used the word “friend” or “best friend” when talking about the pump (Lowa et al., 2005).

In research on type 1 diabetes and insulin pumps, studies have mostly been conducted with adults and a wide age range (Grose et al., 2018; Hood et al., 2015). Similar statements were made to our study in a study involving individuals between the ages of 20 and 60 with type 1 diabetes. For example, individuals expressed themselves with the words 'flexibility, freedom, hope' in the sub-theme of lifestyle freedom and associated these words with food, sports and social life. They mentioned the problems experienced as being visible on clothes and having to take breaks from activities such as the sea. In addition, when this study was compared with ours, it was revealed that the individual with diabetes faces similar experiences regardless of their age. Although individuals with diabetes are older, their families and friends feel anxiety and fear; they stated that when they come together with individuals with diabetes in a social environment, it relieves them to see that they are not alone, that they are the same, that they feel better in the activities of diabetes camps and associations, and that they face the stigma of diabetes in other environments. As a suggestion, they stated that they wanted devices that were waterproof and smaller in size, similar to our study (Grose et al., 2018).

In another study, individuals with type 1 diabetes aged 19-24 had similar statements. For example, individuals stated that they saw the pump as a part of themselves, expressing it as 'hope, freedom, normality'. As negative aspects, they expressed their experiences such as being constantly attached to a device, facing high blood sugar due to clogging of the embankment, being disturbed by the sound coming from the pump, trying to hide so that the pump is not seen, and searching for normality, with sentences similar to our study (Hood et al., 2015).

In a study conducted with children aged 5-17 with type 1 diabetes and their parents, similar to our study, they reported that children switching to pump use enabled them to become more independent from their parents and play a more active role. Children reported that the pump generally had more positive effects in their school life, but they reported that the pump fell off or had to be removed, especially during sports classes, as in our study (Alsaleh et al., 2014).

Two systematic review studies examining the experiences of children/adolescents and their parents in using insulin pumps found that regardless of age, insulin pumps provide children with more flexibility in daily life, especially regarding eating and socializing; it was concluded that the disadvantages are pump visibility and physical activity, physical limitations (Alsaleh et al., 2012; Grose et al., 2017).

In a study conducted with individuals with type 2 diabetes, the negative aspects of the insulin pump were listed as being entangled in the pump cable while sleeping, being woken up by sound, having to remove the pump while doing sports, especially swimming, being uncomfortable with it being seen through clothes, being exposed to stigma, and experiencing hyperglycemia due to blockage of the set (Alsairafi et al, 2018). All these studies show us that there are similar problems in pump use regardless of diabetes type and age.

Considering that it has many positive aspects and the satisfaction level is high, it is recommended to increase the government support for the pump use and to make the pump use more widespread. During the research process, a difficulty was encountered that the participant actually wanted to give a different reply, due to the fact that he/she answered by looking at the family member in the family. In such cases, the interviews were continued at different times with the permission of their families. Because all of the children were aware of the trauma that the disease process created in the family. Some children gave more superficial answers because they avoided giving answers that would upset their families. It is recommended that researchers who plan qualitative research with the child group in the future should interview the interviewee alone so that the interview can be conducted in an appropriate way.

Conclusion and Recommendations

Whereas the meaning of the insulin pump for the children was a device they had to carry with them all the time and depended on to perform organ functions, they described the pump as a part of themselves, their friend, and the continuity of life. They stated that life without the pump was more difficult and irregular since it was a facilitator in the conduct of daily life. Also, they were independent in their daily lives but that from time to time they had problems with the device such as the size and blockage problem, and that they were exposed to the stigma at school. Despite the negative situations/sides they encountered, they described the pump as indispensable. They stated that thanks to the hospital and the pump, they had the chance to get to know other children with diabetes, that they were freed from the feeling of loneliness, felt free and the feeling of embarrassment disappeared. They mentioned that they requested the device to be smaller and as invisible as possible, as they always had to pay attention to their diet despite having the use of pumps. It was concluded that they requested to be treated like a normal child as a result of raising the awareness of the society, but they did not feel like a normal child due to their current situation.

In summary, the children using insulin pumps expressed their positive and negative views on their experiences. Although negative experiences, they mentioned that they were able to carry on their lives more comfortably and suffered less after the installation of the pump, excluding the minor setbacks. In our country, the pump is allocated to younger age groups in a way that the State covers a certain amount of the price. However, as a result of this study, we have once again concluded that the pump, which is described by the children as 'my indispensable, my freedom', should be accessible to all children with diabetes, and that the marginalization of children will be further reduced by raising public awareness on this issue.

Limitations

The limitations of the research are that although the research is multicenter, a certain number of samples cannot be taken from each center.

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What did the study add to the literature?

- This is a study that in depth questions the experiences of using insulin pumps in children.
- Although the advantages and disadvantages of the pump for children with type 1 diabetes are emphasized in the literature, it is the individual with diabetes who wears and experiences the pump. In this regard, in-depth interviews with the individual revealed unforeseen advantages and disadvantages.
- Based on children's experiences, it has been determined that there is a lack of information about diabetes technologies in schools.

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