

# Consultation-dependent motivation to self-management in adolescents with type 1 diabetes: a qualitative triangulation study

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## Research article

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# Abstract

**Background.** The impact of health care professionals on the motivation for self-management in adolescents with type 1 diabetes has been highlighted as important. It is, however, not well understood how pediatric diabetes health care practitioners can help adolescents become more motivated to self-management. The aim of the study was to investigate how practitioners can motivate their patients to self-management in consultation and how adolescents with type 1 diabetes experienced consultation-dependent motivation to self-management.

**Methods.** Based on a qualitative research design, the study triangulated participant observations of 11 consultations at a pediatric health care clinic and 10 interviews of the adolescents (15-17 years of age) about their experiences of consultations. Using Giorgi's phenomenological method, the analysis showed five categories important to consultation-dependent motivation to self-management: 1. Consultation setting, 2. Consultation conversation, 3. Roles in treatment, 4. Assuming consultation-dependent responsibility for self-management, and 5. Relationship in treatment. Results from the analysis were compared to fulfilment of the motivational needs for autonomy, competence and relatedness described in Self-Determination Theory.

**Results.** Overall findings showed that the adolescent's developmental process of becoming autonomous in relation to self-management was influenced by consultations, and that the need for relatedness was experienced as valued by the adolescents.

**Conclusions.** The conclusion of the study was that relatedness and development of autonomy were experienced as important for consultation-dependent motivation to self-management in 15-17-year-olds and may be fundamental to adolescents' experience of competence in relation to self-management.

## Background

Metabolic control and management is an ongoing task for patients with type 1 diabetes (1). The Danish Diabetes Database showed that in 2016/2017 only 40% of children with type 1 diabetes reached the treatment goal of an HbA1c  $\leq 7,5\%$  (2). The patient's self-management is an important part of reaching this treatment goal, thus minimalizing diabetes-related complications. Self-management of type 1 diabetes in children and adolescents was defined by Schilling et al. (3) as "an active, daily, and flexible process in which youth and their parents share responsibility and decision-making for achieving disease control, health, and well-being through a wide range of illness-related activities" (p. 92). Studies show that many children struggle with managing their diabetes and experience psychological stress related to their treatment (4) and youth with type 1 diabetes are at a higher risk of experiencing psychological problems compared to their peers (5). Moreover, even optimal self-management cannot always guarantee good metabolic control (1) as adolescents more often experience problems related to reaching an optimal level of HbA1c due to physiological and psychological changes (6,7). Health care professionals may play a significant role in motivating patients' self-management. According to guidelines from the International

Society for Pediatric and Adolescent Diabetes (ISPAD), “Developing a trusting and motivating relationship between health care professionals and the adolescent patient and maintaining continuity may result in better patient self-care” (6) (p. 245). However, to the best of our knowledge, no empirical data have to this date confirmed this statement.

How practitioners can affect their patients motivation to change behavior has been studied extensively using the Self-Determination Theory (SDT) (8,9). According to the SDT, three innate motivational needs are the foundation for our motivation and integrity in behavioral changes (10): the needs for autonomy, competence and relatedness (9). According to Ryan et al. (9), the health care climate is partly accountable for the fulfilment of these needs as practitioners can facilitate the patient’s motivation to health-related behavioral changes by creating an autonomy supportive health care climate that fulfills the motivational needs. In a metanalytic review, Ng et al. (8) compared 184 independent studies that used SDT in a health care setting. Based on their results, Ng et al. (8) concluded that SDT could be successfully used as a conceptual framework for understanding patients’ motivation to behavioral change and help improve physical and mental health-related interventions. However, none of the studies in Ng et al.’s review investigated SDT in relation to adolescents with type 1 diabetes.

The aim of the present study was to investigate how practitioners can motivate their patients to self-management during consultation, and how adolescents with type 1 diabetes experienced consultation-dependent motivation to self-management.

## **Methods**

### **Design**

The present qualitative study used a phenomenological approach defined by Giorgi (11) to gain an understanding of how the adolescents experience the phenomenon: consultation-dependent motivation to self-management. The study used triangulation as a method, collecting participant observations of the adolescents’ consultations at a Pediatric Diabetes Care Unit (PDCU) at Odense University Hospital, and subsequently interviewing the adolescents about their experiences of the consultation. According to Denzin (12), triangulation can help validate theoretical interpretations of the data by giving the participants the possibility to object to the investigator’s interpretation of the observational data.

### **Data collection**

Data was collected in January and February 2018 by first author. Participants were recruited in the waiting room prior to their consultation at the PDCU. Inclusion criteria were: type 1 diabetes diagnosis, age between 15 and 17, and verbal and mental ability to participate in the interview. Eleven adolescents agreed to the participant observational setting of their consultation. After recruitment, participants participated in their consultation as usual. Observations were made from a corner of the room behind the adolescent and their parents. This view was chosen to make as little intrusion as possible on the

normality of the consultation, but also to signal to the family that the aim was to take their point of view. The general guidelines for consultations at the PDCU for adolescents belonging to this age group, focused on a conversation based on the adolescent's blood measurements and insulin intake since the last consultation and on a judgement of their HbA1c. The hospital also encourages parents to leave the consultation room during part of the consultation, so the adolescents will get used to managing the consultations on their own. Interviews were either collected right after the consultation at the PDCU (n = 2) or by telephone one of the following days (n = 8). Due to miscommunication, one participant was not interviewed. All interviews were recorded and lasted between 19 and 35 minutes. Interviews were semi-structured allowing discussion of observations, thus enhancing data triangulation. The interview guide was developed to this study and is included in this article as additional file 1. The interview guide covered following themes: 1. Background information, 2. Experience with having diabetes, 3. Experiences of self-management, 4. Experiences of the consultations and the PDCU in general, 5. Experiences of the communication at the PDCU and during the observed consultation, 6. Experiences of motivation to self-management in general and whether the consultations were in general experienced as motivating to self-management. Transcriptions of interviews and observational notes were conducted by the first author concurrently with data collection. Meaning condensation was used during the transcription of interviews. Demographic characteristics of the participants are presented in table 1.

**Table 1: Participant characteristics**

Sex	Mean age	Mean number of years since onset of diagnosis
Female (n=6)	15.7	10
Male (n=5)	16.6	6.8

Table 1: Characteristics of participants sex, mean age and number of years since onset of diagnosis.

## Data analysis

The data analysis was conducted by the first author according to Giorgi's phenomenological analysis method (11). First, all data transcripts were read to understand the overall meaning attributed to the phenomenon. Second, units of meaning about the phenomenon were derived from the text. Third, these units were changed into phenomenologically and psychologically sensitive expressions that could be generalized into themes (11). Data triangulation during analysis was made more likely by merging the themes from the observational data with the themes from the interview data, hereby five overall categories were created. The five categories and corresponding themes are presented in table 2.

## Ethical aspects

Following the Danish Data Protection Agency guidelines, all personal identifiers were removed from the data, and no subject code identifiers were linked back to specific individuals. The National Science-ethics Committee was consulted and the families received oral and written information. Written consent to

participation was collected for the participants and their parents, if the parents attended the consultation (n = 10). However, according to regulations from Region South Denmark: the science-ethical committees, no parental consent is required in studies like the present because the adolescents are between 15 and 17 years of age (13). The participants were assured that participation was voluntary and information would be treated confidentially.

## Results

The data analysis revealed that the phenomenological experiences connected with consultation-dependent motivation to self-management of type 1 diabetes in 15- to 17-year-olds could be organized in five categories: "Consultation setting", "Consultation conversation", "Roles in treatment", "Assuming consultation-dependent responsibility for self-management", and "Relationship in treatment" (Table 2).

*Table 2 should be inserted here.*

## Consultation setting

Looking across the interviews, several adolescents expressed feeling safe during consultations and that they appreciated the conversation. No interviewee expressed dissatisfaction with the consultation settings. However, the interviewees expressing satisfaction with the consultation setting gave different explanations for their satisfaction: First of all the quality of the consultation conversation and time of day for consultations, secondly the PDCU location being close to home, and finally the feeling of safety in consultation.

The conversations and relationships with practitioners were considered to have influenced some interviewees' experiences of having diabetes. Consultation could influence their daily lives in negative as well as positive ways as illustrated in the quotes below.

*It doesn't affect how I treat my diabetes, but more how I feel, psychologically, about myself. (Boy, 17)*

*Even though I come there with the purpose of checking up on my diabetes they make it feel very relaxed and very "easy to live with if you only want to", because that's how it is really. (Girl, 17)*

The interviewees' experiences of consultations as motivating to self-management were divided. To some of the interviewees the check-up control of their HbA1c and blood sugar values since last consultation was motivating. The check-up gave the patients an opportunity for proving to their doctors and nurses that they did in fact adhere to the treatment regime. The relationship with the practitioners was mentioned as important to these adolescents' motivation to self-management:

*They don't say "you should do this and this and we'll see you next time". I think that's a really nice experience so I'm looking forward to going, because I feel like: "I'm going to show you how good I am", exactly because I feel like I know them. (Girl, 17)*

*Of course, you see your numbers coming out of the pump. Then you discuss your long-term chart and it can either be green, yellow and red. Of course, if you're in yellow and close to green, you want to move closer to green. (Boy, 17)*

Some interviewees experienced that the motivation to self-management was primarily an inward need for feeling good and thus not affected by experiences in consultation. They described it as important that practitioners understood that the adolescents wanted to take care of their blood sugar level and feel normal. However, one interviewee explained that consultation-dependent motivation was not enough for her to change her habits.

*To be perfectly honest it only changes in a week or so, then you fall back in your old routines. Sometimes you are told you really must change, but you quickly go back to your everyday life where you have to think about other things. That's why it's difficult to actually do what they recommend. (Girl, 16)*

## Consultation conversation

According to the observations, the following characterized consultation conversations at the PDCU: First, the practitioners generally praised the patients for their commitment to treatment, especially while controlling the patient's blood sugar measurements since last consultation. Second, the practitioners used part of the consultation to talk with the patients about other things than diabetes like the weather, school, friends, transportation to the hospital, the future, and hobbies. Third, at times the practitioners normalized the difficulties that patients from this age group could experience, such as following treatment plans, remembering to measure blood sugar, or thinking that it was unfair that they had diabetes. Fourth, at times the practitioners acknowledged that it could be difficult having diabetes or answering practitioners' questions during consultation, and, finally, the practitioners generally discussed diabetes-related themes, including HbA1c, and future changes in treatment, but also other subjects of interest to this age group, e.g. alcohol intake and transfer of treatment.

All in all, the practitioners tried to help their patients by praising their efforts and acknowledging and normalizing difficulties with self-management and having diabetes. They also consistently small-talked with their patients about other things than diabetes. As illustrated in the quote below, some of the interviewees said that the conversations about other things than diabetes were important, because it made them feel like they were not just perceived as patients by the practitioners.

*It becomes a bit more personal. I feel like I don't just go see a doctor and a nurse, because they try to understand who I am as a person and I like that. (Boy, 16)*

According to one interviewee, it also made sense because the things that troubled her everyday life would naturally affect her self-management. Another interviewee said that it was nicer having the practitioners tell her what to do than her parents doing so. To these adolescents, the practitioners' interest in their lives was motivating to self-management. However, one interviewee only experienced the conversation about

other things than diabetes as mere small-talk. The importance of these conversations thereby differed between interviewees.

To some interviewees, it was important that the practitioners listened to them, making them feel respected as equals in their diabetes treatment, even though their choices were not always what was best for their HbA1c level.

*If they told me “you must eat in the morning or else...”, I’d have told them “I don’t think it’s okay you’re telling me that”, but I think they respected what I said. (Boy, 16)*

*The first time we agreed that I should try to manage it myself I just don’t think I was old enough, because it didn’t look pretty, but the advice and motivation they gave me helped me do what I do today, helping me being good enough at controlling it. (Boy, 16)*

According to these statements, the adolescents experienced that their autonomy was acknowledged by the practitioners and to some interviewees this made it easier for them to adjust to the practitioners’ advice as compared to advice from their parents. However, a group of interviewees had experienced that in the past practitioners had spoken harshly to them during consultations. For most of these adolescents, this had made them less motivated to self-management.

*Personally, I don’t feel like doing it when I’m told off, as compared to when they say: “we believe you can do it”. (Girl, 15)*

One adolescent said, however, that it made her realize she needed to do more.

*It made me sad, which they also realized, but it wasn’t because of the way they said it, it was because I hadn’t done a better job. I was disappointed with myself because I thought I was doing okay... well, it was a good kick to make me do more. (Girl, 16)*

Therefore, the majority experienced a harsh tone as negative for motivation but it could also be considered motivating to self-management. The difference may depend on how the adolescents perceive their own autonomy in management.

## Roles in treatment

According to the participant observations, the doctor and the nurse each had different roles in treatment during consultations.

During consultations the doctor was spokesman, meaning that they initiated the conversation, either by asking the patient what they wanted to talk about or by presenting the agenda of the conversation. The doctor also summarized the conversation for parents who had left the room during part of the consultation, though in one consultation this task was executed by the nurse. It was observed that in the consultation the doctor was an authority who decided whether the parents were to participate in the

whole consultation or only in part of it. The doctor also distributed tasks to the nurse. In some cases, the patients did not question the doctor's decisions concerning treatment changes. The doctor gave diabetes-related advice, e.g. about alcohol consumption, calmed the patients and their parents if they had diabetes-related concerns, decided, often in consultation with the nurse, how treatment should proceed, and set the date for the next consultation.

Based on the observations, the nurse's role in consultation was to measure HbA1c and report the result, to handle the pump, e.g. printing diagrams with information about blood sugar measures and insulin administration, to adjust the pump to treatment changes, and to give advice regarding pump related problems, e.g. change of batteries. The nurse also advised patients and families about carbohydrates, transition of treatment and management of the pump, made new appointments for consultations, and invited patients to an informal youth arrangement at the hospital.

Although the observational data showed differences as to which tasks were handled by the doctors and nurses, respectively, interview data indicated that the adolescents did not differentiate between the two professions and considered them as a team. However, the adolescents had different opinions about the roles of these teams. A few interviewees explained that the practitioners were trying to help them, hence acknowledging their personal, sensitive questions, e.g. about pregnancy. Communicational relations were thereby characterized by a knowledge about the practitioners' good intentions. Others experienced the practitioners as authorities, who had the final say in future treatment.

*I feel like they know what's the best thing to do, so I want to do what they tell me to, because I'm also counting on and hoping that it'll help me. (Girl, 17)*

To perceive practitioners as experts could be helpful in maintaining self-management tasks but also a surrender of the responsibility for self-management, thus undermining autonomy. In relation to this point of view, being praised during the conversations for their level of HbA1c was experienced as important in figuring out what the adolescents needed to do better and what they did well.

*If there's something I need to do better, they are always good at pointing out the things I'm doing good. (Girl, 17)*

However, to some interviewees the practitioners' judgement of the blood sugar diagrams and HbA1c was a negative experience because it forced them to face realities. The practitioners were also expected to tell whether or not the adolescents took care of their diabetes.

*They can tell from my numbers whether things are going bad or worse and it's just a matter of whether I understand it too and of course it's best if I do. (Girl, 16)*

*It's not like I don't dare, I'm just nervous because I know I have to face the truths in a way and being told again: you have to do this better. (Girl, 17)*



This point of view gave the practitioners a more judging role in treatment and possibly the adolescents less of a feeling of autonomy.

## Assuming consultation-dependent responsibility for self-management

Assuming consultation-dependent responsibility for self-management was observed during participant observations. The practitioners acknowledged the patient's problems with assuming responsibility for self-management and accepted their refusals of treatment-related changes. The doctors had conversations with their patients about becoming wiser than the pump. One doctor recommended patients to think independently in relation to the pump instructions regarding insulin administration, whereas another doctor advised a patient to follow the pump instructions more carefully. The practitioners involved their patients in the consultation conversation by asking them questions, e.g. regarding future treatment. Parents were not always asked to leave the consultation room and only left if the doctor asked them to. In some cases, the parents or the nurses withdrew the patient's responsibility for treatment by changing the setting of the pump without the patient's knowledge. The practitioners also told one of the patients that her parents should be involved in a hospitalization, when the patient said she wanted to handle it on her own. In seven consultations, the patients assumed responsibility for self-management, in two cases the parents were reproved for suggesting changes to future treatment, both times in connection with parents having been asked to leave the consultation for a period of time. The practitioners generally supported the adolescent's suggestions for assuming responsibility, e.g. going to future consultations without their parents, but not in the case of handling hospitalization alone, however.

Overall, the practitioners supported their patients in taking over responsibility for self-management from their parents, for instance by inviting the patients to participate in the conversation and, in some cases, by managing part of the consultation without their parents' participation. Most interviewees had opinions about their parents leaving the consultation room. One interviewee experienced it as positive that his parents did not leave the consultation, because he felt reassured by their presence. Another said that he felt neutral about his parents staying or leaving. However, most interviewees experienced it as positive that their parents left the consultation room for a period of time. Handling the consultation on their own made these adolescents feel more responsible.

*I get to speak about the way I see things, so it's not just my parents' point of view that's discussed. (Boy, 16)*

The adolescents may also have felt more confident in assuming responsibility and disagreeing with their parents when they had had consultation time alone with the practitioners. The practitioners may therefore be able to enhance the process of assuming responsibility for self-management between parent and adolescent. However, in relation to the process of assuming responsibility for self-management between patient and practitioners, observations were more mixed as shown in the example of becoming wiser

than the pump. One interviewee told that, on the one hand, the practitioners told him to be more autonomous regarding the pump instructions, but, on the other hand, they also encouraged him not to.

*I think they were on both sides. I think they said I did it a bit too much, but that it was still okay and cool to see that I'm thinking about that stuff. (Boy, 16)*

The process of assuming consultation-dependent responsibility between patient and practitioners is possibly a separate process from that between parent and child, which is likewise important for the development of adolescent autonomy regarding self-management.

## Relationship in treatment

In the participant observations, the relationship between patients and practitioners was observed as follows: First, in case of conflict between the diagrams from the pump and the patient's experience, the practitioners chose to believe in their patient's view of things, thereby respecting the patient's experiences and their problems related to self-management. Second, the practitioners, especially the nurses, knew their patients well. They would ask their patients about hobbies and everyday life, have inside jokes, and have a way of comparing self-management tasks with the patient's areas of interest, as shown in following observation:

*The nurse tells the family that they should eat the same type of pasta each time to know how the body reacts to that particular type of pasta. "We can't give you an answer", she says. She compares it with sport, where you also have to do the same exercise several times to become better. The patient says that he will choose a day every week where he will test one type of pasta.*

The way the practitioners knew their patient's hobbies and tried to connect with them showed that the patient-practitioner relationship was more than just a formal relation and could have a positive effect on the motivation to self-management. When asked about the episode described above, the interviewee said:

*I just see it as a new way of proving something and it motivates me [...] [the nurse] knows I care about my sport and play computer games with my friends, and she knows I make bets with them, just for fun of course, but of course I want to be the best you possibly can be, instead of the worst you can be. (Boy 16)*

Most interviewees told that they experienced the treatment relation as positive, especially their relationship with the nurse, who was the same in every consultation. Two interviewees said that they did not mind not seeing the same doctor in every consultation, as long as the nurse was the same, whereas one adolescent thought it was strange.

*There has been a new doctor with [the nurse] every time it's a bit ... a bit weird in my opinion. I don't know why ... I think I can be open and I'm not afraid of talking to them, because they have their oath of silence. (Boy 16)*

Overall, the adolescents mostly used the practitioners' names when talking about them instead of calling them by their title. This gave the impression that the relationship with practitioners was familiar and important to the adolescents, making them feel safe in consultation. One interviewee said that if the nurse was present in consultation, she did not need her mother's presence. Two interviewees said that the relationship mattered to the motivation to self-management, because the practitioners knew that the adolescents were not bad diabetics in case the blood sugar measurements were not optimal, and that they just had had a rough period. All in all, the analysis showed that the relationship to the practitioners mattered to most of the adolescents and affected their experience of feeling safe in consultation and motivated to self-management.

## Discussion

The present study investigated how health care professionals in the consultation could motivate adolescents with type 1 diabetes to self-management, and how adolescents with type 1 diabetes experienced consultation-dependent motivation to self-management. To the best of our knowledge, this study was the first to investigate the link between consultation, motivation, and self-management in adolescents with type 1 diabetes. This qualitative study revealed five categories of themes relevant for consultation-dependent motivation to self-management in adolescents with type 1 diabetes. The categories were: consultation setting, consultation conversation, roles in treatment, assuming consultation-dependent responsibility for self-management, and relationship in treatment. Overall, interviewees expressed satisfaction with the consultations. The findings of this study are discussed in relation to the three motivational needs of SDT: autonomy, competence and relatedness.

*Autonomy.* The ISPAD guidelines recommend that adolescents gradually assume more responsibility for the diabetes management tasks, in agreement with their parents (14). In the present study, observations were made of the practitioners acknowledging their patients' problems related to assuming responsibility for self-management, accepting refusals to treatment related changes, involving patients in the consultation conversation, and asking parents to leave the consultation room. Overall, the practitioners were thus observed to support the patients' involvement in consultation-dependent treatment, for instance when a patient suggests going to consultations without their parents in the future. However, some observations also showed that practitioners did not involve patients in self-management decisions, e.g. changes in pump settings. Based on the present study, we argue that the development of autonomy in self-management in adolescents with type 1 diabetes can be regarded as two simultaneously ongoing processes: one between parents and child, and one between practitioners and child. In this study, practitioners generally supported their patient's autonomy in relation to their parent's involvement. However, the practitioners may have found it more difficult letting the adolescents become autonomous in relation to self-management tasks previously controlled by the practitioners.

To some interviewees, an important part of consultation was that the practitioners respected their autonomy in relation to treatment. Most interviewees had positive experiences of parents leaving the consultation room because this made them feel more responsible for their treatment. However, some

interviewees also told that they had experienced a harsh tone during consultations in the past, which had made most of them feel less motivated to self-management; one interviewee had experienced it as motivating, though. The patient's assessment of the practitioners as an authority may be important to autonomy. In the present study, some interviewees experienced the practitioners as authorities, who decided their future treatment and were able to judge whether the patients adhered to their treatment. According to Ryan et al. (9), the more regulation a doctor asserts over his patient, the less likely the patient is to feel autonomy and thus motivation to self-management. In this view it is possible that the adolescents' experiences of their practitioners as judges and authorities could correlate negatively with their feelings of autonomy in treatment, making motivation to self-management less likely. Assuming responsibility and being autonomous in consultation-dependent motivation to self-management is therefore considered an ongoing developmental process in which the individual patient's need for independence and skills in self-management should be taken in to consideration, both in relation to parents and practitioners.

Whether adolescents with type 1 diabetes should be encouraged to be more autonomous in their treatment has been discussed by Greening, Stoppelbein, Moll, Palardy, and Hocking (145). In their study, they found a negative correlation between intrinsic motivation and HbA1c in adolescents with type 1 diabetes, which led them to conclude that adolescents' lack of experience and objectivity could increase the risk of the adolescents making bad healthcare decisions. Greening et al. (15) therefore recommended that adolescents should be encouraged to consult their practitioners and parents instead of taking full responsibility for their treatment. Delamater et al. (16) found, however, that intrinsic motivation was associated with better self-management and glycemic control in minority youth with type 1 diabetes. Intrinsic motivation was defined by Ryan & Deci (10) as the motivation to act based on the satisfaction of doing this act. In relation to the definition of self-management as activities and decisions made to control the disease and gain well-being (3), it can be argued that self-management is never intrinsically motivated as it is always based on another goal than the satisfaction of the act itself. This questions whether intrinsic motivation can be studied in relation to self-management.

*Competence.* The need for competence was not clearly identified in the analysis. Competence is described by Ryan et al. (9) as facilitated by autonomy because the willingness to act is fundamental to becoming competent. The fact that the responsibility for self-management, and thus the autonomy in relation to this, is relatively new to adolescents may therefore indicate that competence is not yet something that adolescents experience. According to Ryan et al. (9), practitioners can help facilitate competence by offering skills and tools for change and by supporting their patient's choices. In the present study, some interviewees expressed feelings of becoming more knowledgeable about self-management during their consultations and many observations were made of practitioners praising their patient's efforts and making suggestions as to how to improve on self-management tasks. The study indicated that the relationship mattered to some of the interviewees' experiences of the practitioner's advice.

*Relatedness.* According to ISPAD, the relationship between the health care professionals and the adolescent patient is important for the patient's self-management (6). In line with the ISPAD guidelines, our study found that the relationship between patient and practitioners is important for the consultation-dependent motivation to self-management. In relation to this, the consultation conversation was important to the interviewees' experience of the relationship with their practitioners. The discussion of diabetes-related treatment issues was the main theme during the consultation conversation, but the consultation conversation was also characterized by practitioners praising their patient's commitment to treatment, talks about other things than diabetes, and practitioners both normalizing adolescents having problems with adhering to treatment and acknowledging patients' difficulties with having diabetes. To some interviewees, the conversation about other things than diabetes was an important part of creating and maintaining a relationship to the practitioners and hence motivating to self-management. The relationship between patient and practitioners was considered important to most interviewees, making them feel safe in consultation. The interviewees felt especially connected with the nurse, who was the same in every consultation. This made some interviewees trust the nurse's advice more profoundly. Taking time in consultation to talk about other things than diabetes was therefore considered an important part of building a relationship with patients, and through this relationship patients felt more motivated to listen to their practitioner's advice about self-management. However, a group of interviewees said that the most important motivation to self-management was primarily their own need to feel good and healthy.

*Limitations.* By using triangulation, this study tries to strengthen the verification of its findings; however, triangulation has its limitations (17). By choosing to observe consultations before interviewing the participants, the first author could be biased in the questions asked (17). Another limitation is the lack of knowledge about the practitioners' phenomenological experiences of consultation-dependent motivation to self-management. Third, the analysis was not sensitive to the motivational need for competence. Fourth, the strength of the current study is the focus on a certain type of consultation context, but this limits the generalizability of the findings to other consultation contexts (18). To generalize the results, one must consider the similarity of the consultation setting to the one described in this study.

## Implications

The present study has several implications for practice and future research. First, to establish and maintain a relationship with a patient, pediatric diabetes practitioners should prioritize having the same practitioners present in every consultation of a given patient throughout their years in the pediatric diabetes clinic. Second, a conversation about other things than diabetes treatment during the consultation may help maintain a personal relationship with the patient and guide conversations about motivation to self-management. One way to make adolescents feel more autonomous in their treatment is to ask parents to leave the consultation room during part of the consultation. Third, this study supports further investigation of consultation-dependent motivation to self-management.

## Conclusion

Consultation-dependent motivation to self-management in adolescents with type 1 diabetes is influenced by their experience of relatedness and autonomy, two of the three motivational needs proposed by SDT. Autonomy is a developmental process of assuming responsibility for self-management and the present study finds that practitioners may influence the process between parents and child. The study also indicates an ongoing process of autonomy between practitioners and their patients, which may influence the adolescents' experience of consultation-dependent motivation to self-management. The study found that the relationship between patient and practitioners was considered important to most of the adolescents participating in the study and may be fundamental to their experience of consultation-dependent motivation. In relation to competence, the third motivational need proposed by SDT, the analysis used found no conclusive support; however, it does suggest that the needs for autonomy and relatedness are important to the adolescents' experience of competence in relation to consultation-dependent motivation to self-management. To our knowledge, this is the first study investigating consultation-dependent motivation in relation to adolescents' self-management of type 1 diabetes. The findings support the guidelines proposed by ISPAD: that practitioners should support adolescents' process of assuming responsibility for self-management from parents, and that practitioners should prioritize continuity and relatedness to their adolescent patients. However, as this is a preliminary study, more research is needed to support the findings.

## Abbreviations

- HbA1c: glycated haemoglobin
- ISPAD: International Society for Pediatric and Adolescent Diabetes
- SDT: Self-Determination Theory
- PDCU: Pediatric Diabetes Care Unit

## Declarations

## Ethics approval and consent to participate

The National Science-ethics Committee was consulted and the families received oral and written information. Written consent to participation was collected for the participants and their parents, if the parents attended the consultation. However, according to the regional science-ethical regulations, no parental consent is required in studies like the present because the adolescents are between 15 and 17 years of age (13).

## Consent for publication

Not applicable.

# Availability of data and material

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

# Competing interests

The authors declare that they have no competing interests.

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# Authors' contributions

RT designed the study, collected and, analyzed the data, and drafted the manuscript. JL substantially participated in the study conception and design, and in editing the manuscript. AS has substantially participated in recruitment of patients, acquisition of the data and manuscript editing. All authors read and approved the final manuscript.

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## **Tables**

### **Table 2: Results from data analysis**

Overall category, interview themes, and observation themes and subthemes		Number of units	
<b>Category 1: Consultation setting</b>		<b>22</b>	
Interview themes	1.1. Judgement of setting	6	
	1.2. Effect on everyday life	6	
	1.3 Effect on motivation to self-management	10	
<b>Category 2: Consultation conversation</b>		<b>83</b>	
Observation themes	2.1. Praise	15	
	2.2. Conversation about other things than diabetes	10	
	2.3. Normalization	5	
	2.4. Acknowledgement	4	
	2.5. Diabetes-related conversation	15	
Interview themes	2.1. Experience of conversation	10	
	2.2. Experience of communication	16	
	2.3. Effect on motivation to self-management	8	
<b>Category 3: Roles in treatment</b>		<b>84</b>	
Observation themes and subthemes	3.1. Doctor	3.1.1. Spokesman	13
		3.1.2. Authority	8
		3.1.3. Judgement and guidance	15
	3.2. Nurse	3.2.1. Calendar	10
		3.2.2. Blood sugar	4
		3.2.3. Advice	10
		3.2.4. Devices	11
Interview themes	3.1. They are trying to help me	4	
	3.2. They are in charge	3	
	3.3. They are judging me	6	
<b>Category 4: Assuming consultation-dependent responsibility for self-management</b>		<b>41</b>	
Observation themes	4.1. Acknowledgement	5	
	4.2. Encouragement	5	
	4.3. Involvement	14	
	4.4. Denial of responsibility	5	
	4.5. Initiative	7	
Interview themes	4.1. Assuming responsibility for self-management	10	
<b>Category 5: Relationship in treatment</b>		<b>33</b>	
Observation themes	5.1. Respect	16	
	5.2. Familiarity	5	
Interview themes	5.1. Relationship	12	

Table 2 shows each category's themes and sub-themes with the responding number of units.