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# Shared and individual medical appointments for children and adolescents with type 1 diabetes; differences in topics discussed?

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## ABSTRACT

**Objective:** The purpose of this study was to examine differences in the type of topics discussed during shared medical appointments (SMAs) and traditional individual outpatient visits for children and adolescents with type 1 diabetes. In addition, differences between the conversational contributions of the participants were examined.

**Methods:** Videotapes of 42 individual outpatient visits and 5 SMAs with 31 children or adolescents were collected and observed using a checklist of topics adapted from the international consensus guideline for the management of type 1 diabetes in childhood and adolescents. Furthermore, patients reported about their experience with the information and support provided during an SMA. Data analysis was performed using one-way ANOVAs and univariate variance analysis.

**Results:** In SMAs, more diabetes-related topics were discussed. During SMAs, the conversational contributions of the different participants seemed to be more equally distributed than during traditional individual outpatient visits. Participants felt that they had learned most from the presence of other patients and their questions.

**Conclusion:** More diabetes-related topics are covered in SMAs than in individual outpatient pediatric follow-up visits.

**Practice implication:** SMAs seem to offer an appreciated variation on the regular diabetes care for children and adolescents.

## 1. INTRODUCTION

Shared medical appointments (SMA) or group visits have emerged in the United States since 1996 and were later introduced in the Netherlands. During an SMA between five to eight, mostly chronically ill patients attend their physician simultaneously to discuss health care issues during a 90 min visit. The physician approaches the patients one-by-one in the presence of the rest of the group, thereby providing the same care as during a traditional individual appointment. The physician is assisted by a professional group leader and a medical assistant or nurse practitioner. The composition of this multidisciplinary care team depends on the type of illness the patients have [1]. The group setting is expected to stimulate active interaction by asking questions and allowing for interruptions to take place. It is the role of the group leader to explain the procedure of the SMA, stress confidentiality, invite participants to respond, and let everybody speak and have their turn. The medical assistant or nurse practitioner is present to measure weight, height

and glycosylated hemoglobin (HbA1c) levels, and to register relevant symptoms and make follow-up appointments.

The SMA concept was originally developed by Noffsinger [2] and [3] as a way to improve both access and quality of care through enhanced patient education and support. A recent review on the added value of group visits indicates that there is evidence to support the effectiveness of group visits in improving patient and physician satisfaction, quality of care and quality of life, and in decreasing emergency department and specialist visits [4]. Group visits seem particularly suited for chronic illness management in allowing more time for self-management education, skill-building, and doctor-patient interaction, thereby reinforcing patient's self-efficacy [4]. In addition, in group visits the key information is expected to be delivered more effectively because the lengthy visits allow for more thorough discussions about health issues [5]. Most of the eighteen studies included in the review on SMAs focused on adult patients only [4]. Apart from one recent evaluation study in type 1 diabetes [6], hardly any research has been done on chronically ill children for whom an SMA might be an appreciated variation of the traditional care with rather standard three monthly outpatient follow-up visits. Besides, physicians and other health care providers are likely to appreciate such a patient visit as well because it can bring about variation in routine work and an opportunity to work with colleagues in a different way [7]. The room for peer-to-peer support during an SMA may also be an advantage, especially for adolescents who tend to listen more to patients with the same age and problems than to their parents or health care provider [8].

The present study examines the topics that emerged spontaneously from the discussions during SMAs for children or adolescents with type 1. As these patients have to deal with their disease for the rest of their lives and their health condition largely depends on proper self-management, they need to learn to cope with the diabetes in a responsible way [9] and [10]. This is, however, no easy task, because especially in puberty the high burden of the disease produces a lot of resistance and treatment nonadherence and, consequently, badly controlled diabetes [11]. Besides, during regular follow-up visits, young patients often behave in a passive way to back out of their responsibility to take care of their disease [12]. Every new intervention method, such as an SMA, which could be helpful in enhancing their health behavior and coping skills, should therefore be explored on its potential benefits. As an SMA lasts longer than an individual appointment and mutual interaction is actively sought, SMAs may provide more opportunity to discuss relevant diabetes-related topics and to invite patients to raise current health issues themselves. In this way, SMA patients learn from each other and pick up information about topics they were afraid to ask or never thought of asking. We therefore expect that the children and the adolescents feel more at ease and more stimulated to contribute to the conversation when they hear their fellow patients talking about a certain topic.

The purpose of this study is to examine the differences between SMAs and traditional individual outpatient visits on each individual's level of participation as well as in the number of topics discussed. The focus is thereby specifically on the topics that, according to the Dutch guideline on type 1 diabetes in children and adolescents [13], need to be attended to during every follow-up visit. In addition, the perceived social and informational value of an SMA will be assessed. Our expectation is that more different topics are discussed during an SMA than during an individual follow-up visit and the young patients participate more actively because an SMA lasts longer and different patients bring up different health care needs.

The following research questions will be addressed:

1. What are the differences between a traditional individual outpatient visit and an SMA for children and adolescents with type 1 diabetes in:
  - a. the amount of diabetes-related topics discussed?
  - b. the conversational contributions of the participants?
2. How do children and adolescents assess the social and informational aspects of an SMA?

## 2. METHODS

### 2.1. Design

In 2008, a project was started titled 'Together to the physician' with fourteen medical teams from different hospital departments and one primary care centre [14]. Every team participated in the training provided by the Dutch Institute for Healthcare Improvement (CBO) directed at applying SMAs in their specific clinical setting. Five pediatric teams focused on children and adolescents with type 1 diabetes. In the participating hospitals, one routine three monthly follow-up visit was replaced by an SMA. The SMAs of the diabetes

groups were more thoroughly examined for the purpose of the present study. Each of the five teams with a total of 31 children conducted an SMA which was videotaped. For this purpose, one unmanned videocamera was used and directed mainly at the medical team. In addition, series of individual outpatient visits with children and adolescents with type 1 diabetes of the same physicians were also videotaped, resulting in a set of 42 videorecorded individual visits to be used as comparative data. The study was carried out according to Dutch privacy legislation. The privacy regulation was approved by the Dutch Data Protection Authority. According to Dutch legislation, approval by a medical ethics committee was not required for this observational study. Patients or parents (for the younger patients) filled in an informed consent form before the recording of the consultation. They could withdraw their consent at any time; no one did.

Apart from the physician, one other team member was present in 18 of the 42 individual visits, mostly a diabetes nurse. In the individual appointments there was never more than one additional team member present, while the SMAs were attended by a total of 3–6 team members, such as, pediatricians, diabetes nurses, dieticians, psychologists or social workers. Participating patients were between 6 years and 19 years of age and participated in different age groups, of 6–12 (children) and 13–19 years (adolescents). None of the children or adolescents had had an SMA before. Parents were welcome to accompany their children to the SMA. The agenda of an SMA was not decided beforehand. The group leader was instructed to highlight shared topics that arise when individual patients were approached by the physician one by one.

## 2.2. Topics

For answering our first question on whether or not SMAs give the opportunity to discuss more diabetes-related topics than individual appointments, a list of topics was used deduced from the guideline of the Dutch Diabetes Federation [13]. This guideline describes diabetes-related topics that have to be discussed during every follow-up visit of children or adolescents with type 1 diabetes. The guideline was developed according to the international ISPAD Consensus Guidelines for the Management of Insulin-Dependent, type 1, Diabetes (IDDM) in Childhood and Adolescence, published in 1995 [13]. The 24 topics used in this study are listed in Table 2. The topic ‘well-being’ included both physical and psychological well-being. ‘Intercurrent disease’ and ‘Intercurrent problems’ included non-diabetes-related health problems. The topic ‘self-control’ included the discussion of the method of measuring blood glucose levels, its current results and the frequency of measuring. ‘Insulin dose’ referred to information about how much insulin the patient uses, the frequency of injecting insulin and possible changes in insulin doses. The discussion of the different methods by which insulin can be used, i.e. injection or pump, was captured under the heading of ‘insulin method’. ‘Injection sites’ included skin lesions caused by injecting insulin or performing self-controls. The topic ‘development’ included physical development, i.e. changes during puberty, as well as emotional development, i.e. self-esteem, fears, shame, self-knowledge and fear of failure. ‘Leisure time’ included issues such as holiday and hobbies. This could be discussed in the context of diabetes, e.g. “how to cope with diabetes during holidays? or in general, e.g. “what hobbies do you have?”.

## 2.3. Observations

For each topic in the guideline it was scored whether or not the topic was discussed. For the individual visits the topics were scored for each patient individually. For the SMAs one form was used for all patients together, thereby assuming that patients could hear also the topic exchange by their fellow patients. To investigate each participant's conversational contribution, the program Observer [15] was used to score the length of speaking turns of the different participants in minutes. As the focus of the study was on the content of the conversations as well as on the extent to which health care providers controlled the visits, the conversational contributions of children/adolescents and parents were put together under the heading of ‘the patient’.

## 2.4. Questionnaire

After the individual visit and the SMA, the participating patients completed a questionnaire on sociodemographics (sex, age, ethnicity) as well as on their experienced health, with the following item from the Short-Form-36 [16]: In general, would you say your health is: excellent, very good, good, fair or poor? In addition, participants were asked if they agreed or not with nine positively formulated statements about the SMA, covering social support, information and the SMA in general. For the patients younger than 12 years, the parents completed the questionnaires. The total response for filling out the questionnaires was 87%.

## 2.5. Statistical analysis

Differences in patient characteristics between the individual appointments and SMAs were tested with one-way ANOVAs. For the analysis of the differences between the individual appointments and SMAs on the discussion of topics a univariate variance analysis was performed, controlled for different physicians, sex, age, ethnicity and experienced health of the patients, and for the presence of parents. The level of significance was set at  $p \leq 0.05$ . All analyses were performed using SPSS 14.0.

## 3. RESULTS

### 3.1. Patient characteristics

The average number of patients in the SMAs was 6, with a range of 4–8 patients. [Table 1](#) gives an overview of the patient characteristics in the individual appointments and the SMAs.

#### [TABLE 1.]

The only significant difference between the individual appointments and SMAs is the presence of the parents ( $p = 0.02$ ). Seven patients attended the hospital for an individual appointment on their own, whereas in the SMAs all children and adolescents were accompanied by one or both parents, regardless of the patients' age. The patients were on average 12.8 (SD 2.8; range 6–19) years of age in the individual consultations and 12.3 (SD 2.7; range 8–18) years in the SMAs (ns).

### 3.2. Topics discussed

[Table 2](#) lists all 24 topics of the guideline. The table shows whether or not there was a significant difference in the percentage of individual and group visits in which a topic was discussed. In an equal number of individual visits and SMAs the topics well-being; insulin doses, weight, length, smoking, alcohol, general development and general leisure time were discussed. Several topics were discussed in a significantly higher percentage of SMAs. This was the case for intercurrent diseases and intercurrent problems, hypo- and hyperglycemias, self-control, insulin method, injection sites and nutrition. The topics diabetes-related development school results, sports and leisure time were also more often discussed during the SMAs. However, the physical examination and blood pressure were topics discussed in significantly more individual visits than SMAs.

#### [TABLE 2.]

The differences that emerged in the percentages of visits in which each topic was discussed indicate that intercurrent diseases, smoking, alcohol, general development, diabetes-related development, diabetes-related school results, diabetes-related sports, diabetes-related leisure time, the physical examination and blood pressure were discussed in less than 50% of the individual appointments. Very similar topics were discussed in less than 50% of the SMAs also, except for diabetes-related development, diabetes-related sports and diabetes-related leisure time, which were all topics discussed in more than 50% of the SMAs.

In the individual appointments the mean number of topics discussed was 12.43 (range 8–18) and in the SMAs this was 17.74 (range 14–21). This difference was significant ( $p < 0.001$ ). Several topics, i.e. alcohol, general development, diabetes-related school results and blood pressure, were discussed in significantly more visits with patients older than 12 years. The topics hyperglycemia, self-control, injection sites and insulin dosage were discussed in significantly less visits in which no parent was present.

### 3.3. Conversational contribution

The length of an individual visit was on average 21 min (range 7–52 min); an SMA lasted 90 min (range 62–115 min). [Table 3](#) gives an overview of the conversational contribution of the physician, patient and team member in total length of speaking time as well as in percentage of the total visit length. The speaking time of the physician seemed to differ most. Contrary to the team members, the physicians spoke relatively longer in the individual visits than in the SMAs. There was no difference between visits in patients' conversational contributions. Apart from the larger contribution of the team members in SMAs, individual and group visits also differed in the amount of time nobody said anything, i.e. there was relatively more silence in the individual visits. Individual appointments with a team member lasted on average 7.3 min longer than individual appointments without a team member.



[TABLE 3.]

### 3.4. Patients' experience

Table 4 shows how many patients agree and disagree with nine statements covering the social and informational aspects of an SMA. Overall, the patients appeared to be positive about the SMA. Almost everyone (92.6%) reported to have learned from the other patients and their questions. The presence of the other patients helped 81.5% of the patients to understand the information better and 44.4% of them to ask questions. The extra time investment appeared to be no problem for the majority of the patients (77.8%). Whereas 70.4% of the patients would recommend participation in an SMA, somewhat more than half the patients (55.6%) would again want an SMA at their next follow-up visit.

[TABLE 4.]

## 4. DISCUSSION AND CONCLUSION

### 4.1. Discussion

Given the higher number of diabetes-related topics covered by SMAs and the increased balance between the participants' conversational contributions in comparison with traditional individual outpatient visits, SMAs seem to have at least some added value for children and adolescents with type 1 diabetes.

The most straightforward explanation for the higher number of topics discussed during SMAs is the fact that SMAs last longer which allows for more time to discuss specific issues. As during an SMA there is less time to spend on each individual patient, the time that is available seems to be used more effectively. Looking more specifically at the type of topics discussed, more diabetes-specific topics, such as hypo- and hyperglycemias, self-control and injection sites, appear to be brought up in SMAs than in individual visits. For the more general topics, such as overall well-being and children's general development, the type of visit seems to play a less prominent role. The child's age as well as the presence of the parent do seem to be relevant in this matter. Certain topics, such as alcohol and blood pressure, were discussed more often with older patients. Other topics, such as hyperglycemia and self-control, were discussed in more (individual) visits with a parent being present. Adolescents are known to fall back into passive behavior when their parents accompany them, which may especially be the case when it comes to these sensitive issues [17]. Although these differences could have clinical value, given the rather low number of SMAs included in the present study and the fact that parents were present in every SMA, they have to be interpreted with caution. The participants' conversational contributions in the different types of visits suggest that there is more balance in the input of the different participants during SMAs. This could, however, be ascribed primarily to the higher conversational contribution of the team members and does, so far, not indicate that SMAs provide a more safe environment for child patients to speak up. In addition, the fact that in SMAs silences lasted half as long as in individual visits, may suggest a more effective use of time, but may also diminish opportunities of communicating empathy and providing space, which are both strongly related to silences [18]. The fact that children nor adolescents contributed more to the conversation during SMAs could be explained by the fact that it was the first time they participated in an SMA and they did not yet know what to expect and preferred to listen and see what happens rather than to speak. The innovative character of the SMA might also explain the fact that every adolescent was accompanied by their parent(s), while in the individual visits, this was not always the case. The presence of the parent might prevent children from disclosing their concerns but, at the same time, their presence also seems to increase the discussion of some highly relevant diabetes-related topics, therefore, the pros and cons of having parents around need to be weighted in every child. Unfortunately, in the present study we only had SMAs with parents being present, which did not allow for an examination of differences between SMAs with and without parents. Future studies should look more precisely into the role of the parents. As patients of 12 years and older did complete the questionnaires themselves, the evaluation of the merits of the SMA does really reflect the adolescents' and not the parents' view.

The asset most often mentioned by the patients of participating in an SMA was the opportunity to learn from other patients and their questions, an observation also reported by others [6]. In the majority of the patients, their fellow patients also helped them to understand the information better, which is highly relevant given the complex and multidimensional nature of the disease. Yet, contrary to expectations, in

only a minority of the patients the presence of others helped them to ask questions. To add, although patients did not mind the extra time investment and they would recommend others to participate in an SMA as well, only half of them would choose an SMA again next time. This latter finding may suggest that SMAs and individual visits complement rather than replace each other, and may therefore need to be offered interchangeably to guarantee high quality diabetes care as well as visit adherence. Another reason could be that patients felt overwhelmed by so many team members being present, or that they felt uncomfortable by the presence of the parents, who were not always present during individual visits. In the participating pediatric departments, the SMA was presented as a substitute for one regular follow-up visit. Children and adolescents were given a choice to either participate in the SMA or not. Unfortunately, we have no information about the number of no shows. But, as all children were accompanied by their parents, these will probably be low in number.

#### **4.2. Conclusion**

This study indicated that more diabetes-specific topics are discussed during SMAs than during individual outpatient visits. Because of the small number of visits no comparisons could be made between different SMAs nor between SMAs with and without parents. Future research should therefore involve a higher number of SMAs with the same and different health care teams, a longer follow up and the assessment of health indicators such as HbA1c. A longer follow-up will also allow for an examination of, often necessary, changes in lifestyle and illness behavior resulting from participating in an SMA. In addition, the small scale character of the present study did not allow for a full examination of the role of peers in encouraging patients to disclose their concerns, a topic highly relevant in the management of chronic illness like type 1 diabetes. The investment of extra costs and time for patients, parents and team members should also be taken into account when evaluating the assets of this innovative type of follow-up visit. And lastly, as previous studies point to age as an indicator of success of group visits [6], future studies should also allow for studying age difference in the acceptability and effectiveness of group visits.

#### **4.3. Practice implications**

For children and adolescents with type 1 diabetes SMAs may provide an appreciated variation on the traditional and rather standard three monthly individual follow-up visits. Before implementing SMAs on a wider scale more research is needed to find out whether SMAs are also effective in terms of better diabetes control and treatment adherence. Results of future studies should also be directed at the organizational changes that are needed to guarantee successful introduction of SMAs in hospitals departments. And, lastly, in this study, the SMAs were attended by three to six team members, almost as many as the number of patients per SMA. The patients might have felt overwhelmed by all these professionals, which could have influenced their conversational contribution negatively. For the purpose of conducting effective SMAs, the number of team members might therefore have to be weighted against the number of patients participating in an SMA.

#### **CONFLICT OF INTEREST**

None.

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**TABLES**

**Table 1**

Patient characteristics in individual appointments and SMAs.

	Individual appointment	SMA
Age (mean (SD))	12.8 (2.82)	12.3 (2.72)
Gender (% female)	52.4%	41.9%
Ethnicity (in %)		
- Dutch	76.2%	67.7%
- western immigrant	2.4%	9.7%
- non-western immigrant	21.4%	22.6%
Experienced health (mean (SD))	3.31 (0.84)	3.61 (0.92)
Presence parent % of visits	83.3%*	100%*

\* Significant difference ( $p \leq 0.05$ ) between individual appointment and SMA.

**Table 2**

Percentages of visits in which the different topics were discussed.

Topics discussed	Individual appointment	SMA	<i>p</i>
Wellbeing	90.5	100	0.056
Intercurrent disease	9.5	41.9	0.003*
Intercurrent problems	59.5	80.6	0.016*
Hypoglycemia	64.3	100	0.000*
Hyperglycemia	64.3	100	0.002*
Self-control	78.6	100	0.000*
Insulin doses	88.1	100	0.253
Insulin method	76.2	100	0.043*
Injection sites	54.8	100	0.000*
Nutrition	71.4	100	0.000*
Weight	81.0	67.7	0.413
Length	71.4	100	0.068
Smoking	2.4	0	0.203
Alcohol	2.4	25.8	0.072
Development general	38.1	25.8	0.992
Development diabetes	23.8	80.6	0.000*
School results general	64.3	100	0.033*
School results diabetes	16.7	38.7	0.014*
Sports and exercise general	52.4	100	0.000*
Sports and exercise diabetes	47.6	100	0.000*
Leisure time general	73.8	87.1	0.411
Leisure time diabetes	38.1	100	0.000*
Physical examination	23.8	0	0.022**
Blood pressure	50	25.8	0.001**

All topics were analyzed by univariate variance corrected for age, sex, race, physician, experienced health, presence parent and duration consultation per patient.

\* Significant difference ( $\leq 0.05$ ) between individual appointment and SMA (less information given in individual appointments).

\*\* Significant difference ( $\leq 0.05$ ) between individual appointment and SMA (less information given in shared medical appointments).



**Table 3**

Conversational contributions of physician, patient and team member in the individual appointment and in the SMA.

Conversational contribution	Individual appointments mean duration in minutes	SMA's mean duration in minutes
Physician	10.1 (47.5)	32.9 (36.6)
Patient + parent	7 (32.7)	30.1 (33.5)
Team member (present in 18 individual appointment)	3 (10.5)	20.8 (23.1)
Silence	2.6 (12.1)	5.7 (6.4)
Total ( <i>n</i> = 42 individual)	21.3	89.9
Total of the 18 individual appointments with a team member	28.6	89.9

**Table 4**

Percentage patients agreeing with the particular statement.

Statement	% not agree	% agree
<b>Social</b>		
I have experienced support from the other patients	18.5	63.0
I have offered support to the other patients	22.2	51.9
<b>Information</b>		
I have learned from the other patients and their questions	0.0	92.6
The presence of the other patients helped me to understand the information better	3.7	81.5
The presence of other patients helped me to ask questions	33.3	44.4
<b>SMA in general</b>		
I found it pleasant that there were other caregivers besides the physician	7.4	66.7
The extra time investment in a SMA is worthwhile	7.4	77.8
I would recommend others to participate in a SMA	7.4	70.4
For the next appointment I would choose for a SMA again	18.5	55.6