Reliability of the Diabetes Fear of Injecting and Self-Testing Questionnaire in Pediatric Patients With Type 1 Diabetes

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The Diabetes Fear of Injecting and Self-Testing Questionnaire (D-FISQ) has been validated in the adult population (1–4), but there is no reliable tool to assess needle fear in the pediatric population with type 1 diabetes. Our objectives were to demonstrate the reliability of the D-FISQ in the pediatric type 1 diabetic population, to evaluate the prevalence of needle fear, and to determine the ability of medical care providers to identify needle fear.

RESEARCH DESIGN AND METHODS — Patients aged 2–21 years with type 1 diabetes were eligible to participate if they had a diabetes duration of >1 month, took insulin by injection, and were English speaking. Exclusion criteria included being a ward of the state, using continuous subcutaneous insulin infusion therapy, and not having a parent/legal guardian present. Potential subjects were approached by study personnel at regularly scheduled clinic visits, and consent was obtained. The study was approved by the institutional review board.

The D-FISQ was administered to each subject and his/her parent or guardian. The D-FISQ is a 30-item self-report questionnaire consisting of two subscales that measure fear of self-injecting (FSI) and fear of self-testing (FST), the latter measuring fear of blood glucose testing (1). The D-FISQ was administered to each parent and each child as follows. If the child self-administered his/her own injections and/or self-tested his/her blood glucose levels, he/she was given the questionnaire asking about his/her experiences. The parent was given a questionnaire assessing his/her observations of the child's feelings about the injections/testing. If the parent administered injections and/or tested the child's blood glucose, then he/she was also given the questionnaire and told to answer according to his/her feelings about administering injections/testing blood glucose. If the child was aged >5 years and the parent primarily administered injections and/or tested blood glucose, then the child was also administered a questionnaire regarding his/her perception of the parent. The parent completed the questionnaire and survey separately from the child.

Each item was scored 0 for never, 1 for almost never, 2 for almost always, or 3 for always. A total score was obtained for each questionnaire by summing the item scores. A score ≥6 was considered positive for needle fear, as has previously been shown to be consistent with needle fear in an adult population (2). These questionnaires were administered to 113 parent/child pairs.

Additionally, the investigators asked each subject's primary diabetes care physician, diabetes RN case manager, nurse practitioner, and social worker to assess whether they believed each subject to have needle fear. Choices were "yes," "no," or "I don't know/unable to assess."

RESULTS — The mean ± SD age of the subjects was 12.92 ± 1.41 years, duration of diabetes was 4.52 ± 0.71 years, and A1C during the prior year was 8.5 ± 1.7%, and the group was 56.6% female. The participation rate was >95% of those approached for consent. The modified D-FISQ administered to both children and adults indicated that at least one of the members of 27 child/parent dyads (23.7%) had significant FSI or FST. Descriptive statistics and distribution of total scores are presented in Table 1. There were no correlations between age, sex, or diabetes duration of the patient and total score on any of the questionnaires (data not shown). Those with FSI (total score ≥6) had a trend toward higher A1C levels than those without FSI (9.1 ± 1.9 vs. 8.4 ± 1.7%, $P = 0.171$). There were no differences in A1C levels between subjects with and without FST. Internal consistency was high for all scales, with Cronbach's α ranging from 0.874 to 0.935 (Table 1).

Of the 27 dyads determined by the D-FISQ to have FSI or FST, 14 (51.9%) were identified by providers as having needle anxiety. Eight (29.6%) were specifically listed as not having needle problems (four of whom only had physicians who were able to assess them; the other four had multiple providers stating that they did not have needle fear). Five (18.5%) had mixed opinions by providers (four of whom had "no" from a physician but a "yes" answer from an RN and/or social worker). Therefore, a group of medical care providers diagnosed needle fear 50% of the time, and physicians were more likely to incorrectly deny that a patient had difficulty with needles.

CONCLUSIONS — This study has shown that the D-FISQ can help to identify patients in the pediatric population with type 1 diabetes who may have FSI and/or FST. The prevalence of needle fear appears to be greater in the pediatric than in the adult population, with 27% of pediatric patients affected by needle anxiety.

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Abbreviations: D-FISQ, Diabetes Fear of Injecting and Self-Testing Questionnaire; FSI, fear of self-injecting; FST, fear of self-testing.

A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

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Table 1—*Descriptive statistics and reliability of total scores for the modified D-FISQ for both parent and child*

Questionnaire	*n*	Mean ± SD	Median	Frequency scoring ≥6	Cronbach's α
When I have to inject myself	82	2.68 ± 4.99	1.0	11	0.929
When I have to test my blood glucose	100	1.89 ± 3.77	0.0	10	0.898
When I have to inject my child	71	1.65 ± 3.68	0.0	7	0.919
When I have to test my child's blood glucose	59	0.76 ± 2.30	0.0	3	0.945
When my child injects himself	65	3.05 ± 5.17	0.0	12	0.942
When my child tests his blood glucose	85	1.54 ± 3.22	0.0	8	0.902
When my mom/dad injects me	81	1.95 ± 4.82	0.0	9	0.951
When my mom/dad tests my blood glucose	69	0.68 ± 2.06	0.0	1	0.948

Children who were not self-injecting or self-testing did not answer the questionnaires regarding these activities; in many cases, these children were too young to administer their own injections or self-test. However, older patients not self-injecting or self-testing may be the most likely to have needle fear, and we therefore may have underestimated the prevalence of this problem.

Care providers are relatively poor at diagnosing needle fear, as a combination of physicians, nurses, and social workers only clearly identified ~50% of those patients found to have FSI or FST in our study population. Unfortunately, physicians, who are typically the gatekeepers for further evaluation or treatment, are particularly poor at recognizing needle difficulties.

Additional studies should be performed to provide further validation of the questionnaire, particularly of the cut scores to be used in the pediatric population. More evaluation is needed to determine whether needle fear in children is associated with poor diabetes control, increased episodes of diabetic ketoacidosis or hypoglycemia, diabetes duration, or decreased quality of life. If such difficulties are demonstrated in children with diabetes, then studies should be performed to determine whether treatment can ameliorate needle fear (5–7).

This questionnaire can easily be administered to patients in a clinic population and may be helpful in identifying otherwise unrecognized difficulties with needles. It takes only a few minutes to complete and can be used as a routine tool for screening pediatric patients with type 1 diabetes.

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