

## Abstract

**Background:** Educating patients and families on the management of Type 1 Diabetes Mellitus (DM) has always been a challenge. Some endocrinologists educate patients and families with new onset Type 1 DM in the inpatient setting, while others have tried to do this process as an outpatient given the changes in the limits of inpatient coverage. Given the challenges in the education process, we must find new and innovative ways to educate patients and families efficiently in order to equip them with the necessary skills to be successful in the management of Type 1 DM. In a world of smartphones and tablets as the mainstay of communication and sources of information, medical professionals can integrate these devices into the education of patients and families. Use of such a platform can make patients and families be more independent in the education process of newly diagnosed Type 1 DM patients.

**Objective:** To study whether the use of a tablet platform as an adjunct in the education of patients and families with newly diagnosed Type 1 DM could lead to improved understanding of diabetes management, leading to better HbA1C improvement, less hypoglycemia, as well as less phone calls to the office.

**Methods:** We will randomize new onset Type 1 DM diabetes patients, so that 50% will only receive traditional diabetes education by nurses and the other 50% will receive the tablet and traditional diabetes education. For the patients and families who will receive the tablet, the tablet will contain an education system with modules that teach the various aspects of Type 1 DM care. Each module will have a pre-test to assess the user's knowledge prior to viewing the modules. The modules have slides that models a lecture on the topic, as well as a video reviewing the topic. Following this, there will be a post-test to assess the user's knowledge. We will then compare patients and families who receive the tablet versus those that do not. The follow-up measures that will be compared consists of improvement in HbA1C, incidence of hypoglycemia and phonecalls to the office. We will also survey the patients and families about the tablet education process. Results: To be ascertained.

**Conclusions:** Our hope is that the patients and families using the tablet platform will become more comfortable with the management of Type 1 DM, which will result in better HbA1C improvement, less hypoglycemia and less phone calls to office

## Background

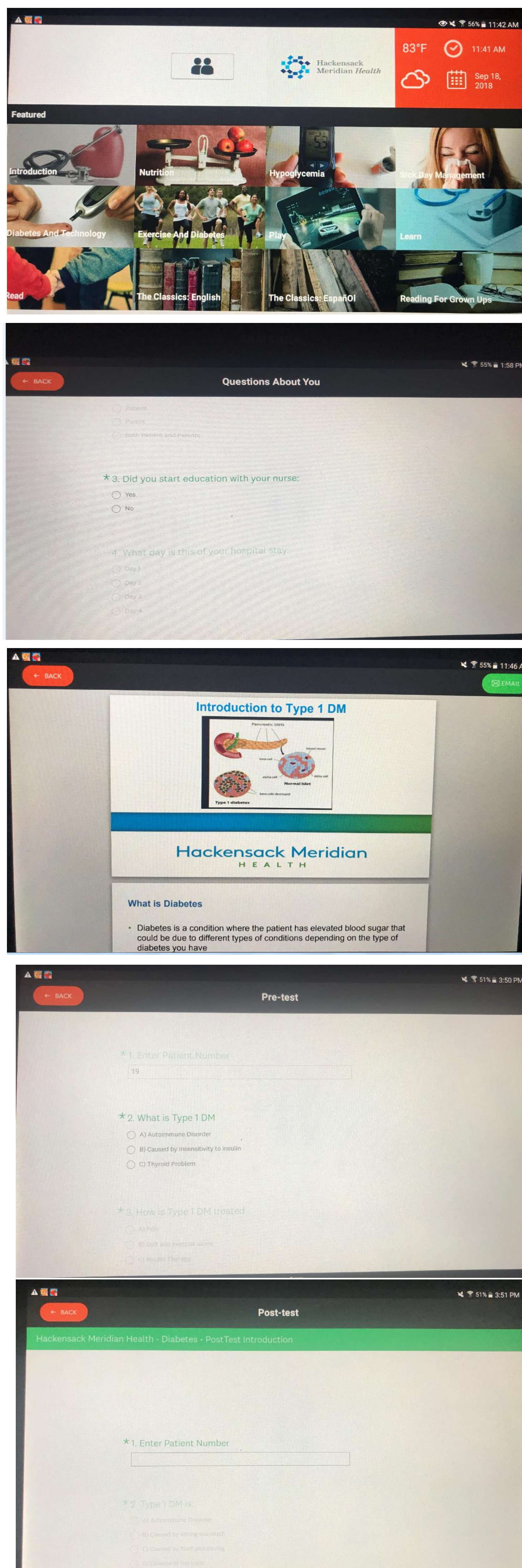
Educating patients and families on the management of Type 1 Diabetes Mellitus (DM) has always been a challenge. Some endocrinologists educate patients and families with new onset Type 1 DM in the inpatient setting, while others have tried to do this process as an outpatient given the changes in the limits of inpatient coverage. Given the challenges in the education process, we must find new and innovative ways to educate patients and families efficiently in order to equip them with the necessary skills to be successful in the management of Type 1 DM. In a world of smartphones and tablets as the mainstay of communication and sources of information, medical professionals can integrate these devices into the education of patients and families. Use of such a platform can make patients and families be more independent in the education process of newly diagnosed Type 1 DM patients.

## Objectives

To study whether the use of a tablet platform as an adjunct in the education of patients and families with newly diagnosed Type 1 DM could lead to improved understanding of diabetes management, leading to better HbA1C improvement, less hypoglycemia, as well as less phone calls to the office.

## Methods

- We randomized new onset Type 1 DM diabetes patients, so that 50% received traditional diabetes education by nurses and the other 50% received the tablet and traditional diabetes education.
- For the patients and families who received the tablet, the tablet contained an education system with modules that teach the various aspects of Type 1 DM care. Each module had a pre-test to assess the user's knowledge prior to viewing the modules.
- The modules have slides that models a lecture on the topic, as well as a video reviewing the topic. Following this, there is a post-test to assess the user's knowledge.
- We then compared patients and families who received the tablet versus those that do not.
- The follow-up measures that will be compared consists of improvement in HbA1C, incidence of hypoglycemia and phone calls to the office.
- We will also survey the patients and families about the tablet education process



## Results

On analysis of results, it showed that patients/families randomized to tablet education plus traditional education had less hypoglycemic episodes, but had the same amount of calls made to office. These patients also had a slightly higher average HbA1C as compared to patients randomized to just standard education. On survey of patients and families, they found that the use of the tablet was a helpful adjunct in their education.

Standard Education:

Patient	Age(yrs)	Admit A1C	Score on Post-test (%)	Hypoglycemia Episodes	Calls to office	Follow-up HbA1C %
1	6	10.5	N/A	6	15	7.2
2	11	10.8	80	0	1	8.5
3	5	10.4	90	4	0	8.8
4	11	12.5	N/A	15	5	7.1
5	17	17.8	70	0	2	ND
6	5	12.3	70	6	4	ND
7	5	14.8	ND	ND	0	14
8	10	11.6	90	4	2	ND
9	17	17.2	80	2	0	ND
Totals for hypoglycemia and calls to office						
Average HbA1C						9.12
Average Score of post-test (%)						80
ND: No data						

Standard and Tablet Education:

Patient	Age(yrs)	Admit A1C	Score on Post-test (%)	Hypoglycemia Episodes	Calls to office	Follow-up HbA1C %
1	17	14.2	80	0	1	ND
2	7	13.8	80	5	5	10.7
3	5	12.3	90	1	4	7.6
4	2	11	ND	1	10	10.4
5	5	11.9	70	4	9	ND
6	5	8.3	80	ND	0	ND
9	3	11.9	70	ND	0	ND
Totals for hypoglycemia and calls to office						
Average HbA1C (%)						9.56
Average score of post-test (%)						79
ND: No data						

## Conclusions

In a time where there is an increasing incidence of Type 1 DM, new and innovative ways are needed to educate patient and families in diabetes care. This study used a tablet platform as an adjunct to the traditional education used to educate patients and families with newly diagnosed Type 1 DM. In comparison to the patients and families receiving just the traditional education, the group that received the tablet was found to have less episodes of hypoglycemia. The fact that these patients/families made the same amount of calls to the office and had a slightly higher HbA1C than the patients/families receiving traditional education may be due to the fact that we did not have all the follow-up HbA1C data and also due to the small amount of patients/families enrolled thus far. We plan to continue this study and enroll more patients to make further conclusions.

## References

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2. Ferrer-Roca O, Cardenas A, Diaz-Cardama A, Pulido P. Mobile phone text messaging in the management of diabetes. Journal of telemedicine and telecare. 2004;10(5):282-5. Epub 2004/10/21. PubMed PMID: 5494086 Journal Article, *Name of Journal*

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