Enhancing Empathy and Competence Through an Integrated Diabetes Management Curriculum

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Introduction
CDC 2014 estimates
• 21 mil with diabetes
• 8.1 mil undiagnosed
• 86 million with prediabetes.¹

American Diabetes Association Standards of Care 2014: Critical role of diabetes self-management education (DSME) to improve outcomes and cost savings.²

Limited research re: DM training among PA students.
• Fisk and colleagues surveyed PA students’ attitudes and beliefs (2014):
  • Patients should be primary decision makers
  • Providers need specialized training in counseling, teaching, and behavior change techniques.³
Kirk and colleagues (2013): 
• High level of agreement between DM counseling skills and PA students’ rapport with and empathy toward their patients.4

Hojat and colleagues (2011): 
• Importance of physician empathy with clinical competence and improved health outcomes for DM patients.5

Delea and colleagues (2010): 
• Active-learning DM simulation improves pharmacy student attitudes toward patients with DM and confidence in providing DM self-management education.6
Goals and Objectives
Objectives

1. Determine changes in PA students’ perceptions of competence in the medical management of DM and providing DMSE

2. Determine changes in PA students’ predicted and actual compliance with following recommendations outlined in diabetic patient simulations for 5 days

3. Assess the impact of the training from the perspective of PA students as a predictor of empathy
Methods
Integrated DM management curriculum across five courses during the 3rd semester of didactic learning:
Teaching Modalities

“Living with Diabetes” simulation based on actual patients from the files of the Certified Diabetes Educator in CPPH course
• Followed by classroom discussion of each case and review of student experiences

Classroom lectures during Pharmacology and during Endocrine block in Clinical Medicine course

Workshops on the use of glucometers and insulin dosing during Patient Evaluation course

Problem-based small group discussions during Integration Skills course
Instructional Objectives Clinical Medicine

• Pathophysiology, Clinical Presentation, Management of type 1 and type 2 DM
• ADA Screening Guidelines for type 2 DM
• Diagnostic Studies and criteria for evaluation of type 1 and type 2 DM
• Dietary goals
• Lipid and BP Goals
• Lifestyle Modifications
Instructional Objectives Pharmacology

- Comparative benefits and indications for
  - Insulin pen devices
  - Insulin regular, NPH and combo (Humulin R, Novolin R, Novolin 70/30)
  - Insulin aspart (Humalog, NovoLog)
  - Insulin glargine (Lantus)
  - Insulin pump
- MOA and indications for various oral agents
- Onset, peak, duration of action of different insulins
<table>
<thead>
<tr>
<th>Clinical evaluation (history, physical, labs) for follow up of patient with Type 2 DM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review classification and criteria for screening and diagnosis of Diabetes Mellitus (DM)</td>
</tr>
<tr>
<td>Patient education re: DM self-management, lifestyle changes, dietary goals, eye and foot exams</td>
</tr>
<tr>
<td>Review of medication options: oral agents and/or insulin</td>
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</tbody>
</table>
### Instructional Objectives Patient Evaluation

Accurate use of the following:
- Glucometer for self monitoring
- Syringe and needle to draw up insulin
- Insulin pen

Indication and interpretation of labs
- Fasting serum glucose
- Oral glucose tolerance test (OGTT)
- HgbA1c
- Microalbumin assay
Glucometer, Insulin Delivery Workshop
Instructional Objectives Clinical Prevention & Population Health

- Diabetes Self-Management Education
- Utilization of exercise prescription
- Values and challenges in regular self-monitoring of blood glucose
- Maintenance of blood glucose and medication diary
- Role of Certified Diabetes Educator
- Carb counting and maintenance of food diary
- Development of empathy re: the impact of lifestyle changes on the person living with diabetes
Diabetic Simulation Patients Cases 1 & 2

34 yo with type 2 DM x 9 yrs. No (DMSE). No BG home testing since lost monitor 3 yrs ago. You’ve been on Actos, metformin and Januvia without improvement, with steadily rising BG and HgbA1c at each office visit over the past 12 mos. Today you are told you should stop Actos and Januvia and start Levemir insulin 10 units BID before breakfast and dinner. The MA shows you how to use the insulin pen and gives you a new glucometer with instructions to read the owner’s manual and test BG 2x/day; also follow the South Beach Diet & keep food logs.

50 yo recent physical exam (@ last physical 2 yrs ago, BG and lipids were slightly elevated). Three days later, the MA notifies you that you have type 2 DM and high cholesterol and that meds have been called into local pharmacy: metformin BID, Januvia q day and Lisinopril q day; also start Atkins diet (carbs < 20 gms/day), and exercise 30 min 5 days a week.
42 yo married female with pre-existing DM on metformin BID (often forgot), not testing BG for yrs; now pregnant with another man’s child, spouse filed for divorce. Hx 3 miscarriages. HbA1c 11.2, BP 158/92. OB tells you to start Aldomet BID; ck BG 4 x/day; start insulin: 15N/5R bf bfast, 5 Reg bf supper, and 10 U NPH bedtime; keep 1500 cal diet; and exercise 30 min most days.

33 yo Hispanic male newly released from hospital with diagnosis T2DM with HbA1c 13.2. On Insulin 70/30 BID, Metformin BID, 1800 cal diet with 60 carbs/meal, BG monitoring BID and exercise 45 min/day. Nurse demonstrated how to use insulin via interpreter, but no interpreter available re: diet. You are fearful bc GM w/DM had foot amputated shortly after her diagnosis.
45 yo AA male, busy real estate banker with 10 hr/day, taking clients to gourmet restaurants 3-4 times/week. + Fam Hx type 2 DM and heart disease (father MI age 52). Wt gain 50# over past 2 yrs, fasting BG 114; BP 158/96, elevated lipids. You are told you have pre-diabetes and should start metformin, Lipitor (atorvastatin), and Tricor (fenofibrate), ck BG BID and keep a log; also ck BP daily; follow low Na/low fat/low cal diet; exercise 30 min 3-5 days/wk, avoid stressful situations.

25 yo white female with cystic fibrosis dx @ age 5 yrs; on vigorous daily respiratory therapy and strict regimen pancreatic enzymes; recent 10# wt loss/polyphagia/polydypsia; random BG 280 – diagnosed with CF related diabetes; recommended to ck BG before all meals & hs; start Lantus q hs & reg insulin bf meals; 2000 cal diet with limit fats and simple carbs; continue pancreatic enzymes; f/u one month
Simulation Kit Contents

- Patient Scenario with instructions
- Glucometer
- Oral “Medications”
- “Insulin” and syringes with pillows
Assembling Kits for Diabetic Simulation
Completed Diabetes Simulation Kits
Program Evaluation
Quantitative: Objective 1

- Competence in the medical management of DM and providing DMSE
- Pre- and Post-Instruction surveys
- “On a scale of 1 to 5, please indicate how competent you feel in the following areas related to care of patients with diabetes mellitus: 1(not at all competent) to 5(very competent)”

1. Understanding the pathophysiology of type 1 and type 2 diabetes
2. Providing patient education re: meal planning and carb counting
3. Prescribing medication for type 1 DM
4. Prescribing medication for type 2 DM
5. Providing instructions on use of a glucometer to check and record blood glucose
6. Providing instructions on drawing up and giving insulin
7. Developing patient oriented self-management goals for exercise
Quantitative: Objective 2

PA students’ predicted and actual compliance with 4 components of the simulated DM patient scenarios:

“Please rate your compliance during your 5 day diabetic scenario on a scale of 1-5: 1(not at all compliant) to 5(very compliant)”

1. Taking the prescribed medication
2. Checking and recording blood glucose daily
3. Following the recommended diet/meal plan
4. Following the recommended exercise program

Pre-and post-test means for each survey were calculated and the Wilcoxon signed-rank test was used to assess statistical significance.
Qualitative: Objective 3

- Impact of the training from the perspective of PA students as a predictor of empathy
- Daily diary entrees during DM patient simulation: *as a lay person*...

1. What self-care issues are you experiencing this week?
2. What questions do you have about the instructions you were given?
3. What emotional issues are you dealing with?
4. How could you benefit from DM self-management education?
5. What potential barriers could be in the way of you managing your DM?
Qualitative: Objective 3 (cont)

- Post-Scenario Survey with 3 open-ended questions:

1. What were your biggest challenges in becoming a diabetic patient?

2. What new insights did you gain through this experience?

3. How has this experience changed your attitude or approach toward patients with chronic disease?
Outcomes
Quantitative: Objective 1


- PA students’ perceptions of competence in managing patients with DM improved significantly in all areas (p<0.0001)
<table>
<thead>
<tr>
<th>Questions</th>
<th>Pre-Test Mean (SD)</th>
<th>Post-Test Mean (SD)</th>
<th>Change Mean (SD)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding the pathophysiology of type 1 and type 2 diabetes</td>
<td>3.64 (0.93)</td>
<td>4.76 (0.43)</td>
<td>1.12 (1.00)</td>
<td>&lt;.0001*</td>
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<tr>
<td>Providing patient education regarding meal planning and carbohydrate counting</td>
<td>2.84 (1.07)</td>
<td>3.86 (0.84)</td>
<td>1.01 (1.38)</td>
<td>&lt;.0001*</td>
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<tr>
<td>Prescribing medication for type 1 DM</td>
<td>1.80 (1.02)</td>
<td>3.87 (0.84)</td>
<td>2.07 (1.39)</td>
<td>&lt;.0001*</td>
</tr>
<tr>
<td>Prescribing medication for type 2 DM</td>
<td>1.82 (1.02)</td>
<td>3.94 (0.79)</td>
<td>2.12 (1.34)</td>
<td>&lt;.0001*</td>
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<tr>
<td>Providing instructions on use of a glucometer to check and record blood glucose</td>
<td>2.78 (1.45)</td>
<td>4.67 (0.55)</td>
<td>1.88 (1.63)</td>
<td>&lt;.0001*</td>
</tr>
<tr>
<td>Providing instructions on drawing up and giving insulin</td>
<td>2.08 (1.27)</td>
<td>4.19 (0.73)</td>
<td>2.09 (1.51)</td>
<td>&lt;.0001*</td>
</tr>
<tr>
<td>Developing patient oriented self-management goals for exercise</td>
<td>3.17 (1.23)</td>
<td>4.54 (0.68)</td>
<td>1.37 (1.41)</td>
<td>&lt;.0001*</td>
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</table>
Comparison of Perceived Competence in the Care of Diabetic Patients Pre-and Post-Instruction 2013-2015 (n=107)

<table>
<thead>
<tr>
<th></th>
<th>Pre Instruction</th>
<th>Post Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM Pathophys</td>
<td>3.64</td>
<td>4.76</td>
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<tr>
<td>Meds T1DM</td>
<td>2.84</td>
<td>3.86</td>
</tr>
<tr>
<td>BG Monitor</td>
<td>1.80</td>
<td>3.87</td>
</tr>
<tr>
<td>Pt centered goals</td>
<td>1.82</td>
<td>3.94</td>
</tr>
<tr>
<td></td>
<td>2.78</td>
<td>4.67</td>
</tr>
<tr>
<td></td>
<td>2.08</td>
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<td></td>
<td>1.82</td>
<td>3.64</td>
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<tr>
<td></td>
<td>2.78</td>
<td>4.54</td>
</tr>
</tbody>
</table>

- PA students’ predicted and actual compliance with following recommendations as outlined in the DM patient simulation decreased significantly (p<0.05) in all areas except following the recommended diet/meal plan
## Comparison of Pre- and Post-Test Results re: Patient Simulation Compliance 2013-15 (n=106)

<table>
<thead>
<tr>
<th>Questions</th>
<th>Pre-Test Mean (SD)</th>
<th>Post-Test Mean (SD)</th>
<th>Change Mean (SD)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taking the prescribed medication</td>
<td>4.16 (1.00)</td>
<td>3.65 (1.32)</td>
<td>-0.51 (1.50)</td>
<td>0.0012*</td>
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<tr>
<td>Checking blood glucose daily</td>
<td>4.01 (1.06)</td>
<td>3.54 (1.16)</td>
<td>-0.46 (1.60)</td>
<td>0.0038*</td>
</tr>
<tr>
<td>Following the recommended diet/meal plan</td>
<td>3.11 (1.23)</td>
<td>2.88 (1.30)</td>
<td>-0.19 (1.83)</td>
<td>0.2747</td>
</tr>
<tr>
<td>Following the recommended exercise program</td>
<td>3.83 (1.17)</td>
<td>3.38 (1.55)</td>
<td>-0.42 (1.92)</td>
<td>0.0350*</td>
</tr>
</tbody>
</table>

*Wilcoxon Signed Rank Test, significance p<0.05.

Students rated their confidence in their ability to follow the recommendations outlined in their diabetic patient scenarios for the next 5 days on a Likert scale from 1 to 5 (1=Not at all confident; 5=Completely confident).
“Although I’ve tested patient’s blood sugar hundred of times, I had a hard time sticking myself.”

“It’s really hard to stay on the diet when I’m on the go... being told I’m not allowed to eat certain carbs just irritates me.”

“Before starting this week, I didn’t think it would be hard... Day one was overwhelming.”

“My fingers are so bruised and they hurt! I’m having nightmares about sticking myself.”

“I may have already killed myself with insulin. It was frustrating to figure out the pen and interpret the dosing.”
“It was embarrassing to have to take out all of my equipment and take my medication when I was eating with other people or in a public place. I didn’t like how everyone would stare at me.”

“Today was a long day at school... all I want is a nice cold Dr. Pepper. A margarita would be nice too, but I have to study. I settled for a Diet Dr. Pepper, but it doesn’t taste the same. I also ate 4 Girl Scout cookies and 2 slices of pizza. I gave in today.”

“Today I skipped breakfast, so instead I injected the insulin prior to lunch instead of breakfast.”

“Low stress is laughable.”
Q. What were your biggest challenges in becoming a diabetic patient?

“Confusion about when to check my blood sugar.”

“Incorporating a new regimen into an already busy and stressful routine.”

“Eating out with friends made for a hard time”

“Seeing my wife eat foods that I couldn’t eat was extremely difficult.”

“I kept forgetting to take my blood sugar checker with me when I left for the day.”

“Overcoming fear of needles...pain of needlestick.”

“Immense lifestyle changes.”
Qualitative - Insights Gained

Q. What new insights did you gain through this experience?

“Dealing with diabetes is a constant juggling act. It truly affects every single day of your life . . . puts restrictions on what you want to do and forces you to do things you don’t want to do.”

“How much harder it is to follow a prescribed plan than to prescribe a plan.”

“Telling someone you just have to prick your finger has a new level of weight for me. It’s a big deal and it’s not fun.”
“Feeling under the weather...opened my eyes to the fact that diabetics don’t get to take a “time out” when they are sick.”

“There are various factors that go into being compliant; looking in from the outside, it looks so easy, going through it was a different story.... Replacement strips are so expensive!”

“Hearing/reading about experiences is a lot different from being in the patient’s shoes.”
Q. How has this experience changed your attitude or approach toward patients with chronic disease?

“Don’t judge and be compassionate.”

“I will definitely be more thorough in explaining directions and making sure that my patients have all the resources they need.”

“Probably a lot of people are “noncompliant” due to lack of education and support!”

“Need to set goals of small changes instead of huge life changing steps.”

“I have such respect now for people who are diabetic.”
Qualitative – Changed Attitude/Approach

“I will be aware of possible factors that could inhibit compliance (money, schedule) and attempt to offer solutions.”

“Never, ever assume a patient is “noncompliant” without the full story.”

“It made me realize just how hard it is to live with chronic disease; I will definitely be more empathic and understanding with patients’ struggles.”

“Noncompliance doesn’t mean laziness.”

“I realized the importance of patient education and taking the time to explain all the components of their treatment.”
Future Directions
Future Directions

- Plans for curriculum enhancement include the addition of mobile applications used to assist patients with self-monitoring and compliance with DM management plans.

- Data collection will continue with the addition of a survey of PA students upon completion of clinical phase training to evaluate impact of training on patient care.
“Sometimes you have the fleeting thought about DM or other diseases caused by obesity that they did it to themselves. But no one volunteers to have type 2 DM, and they’re probably already frustrated at themselves. It is up to us to lead patient forward, not backward.”


References


