# Foot Care for Persons with Type 2 Diabetes: Can a Teaching Video Improve Compliance?



BY Kyle Goettl



David H. Keast

Patient education materials abound—but how effective are they in modifying attitudes and knowledge? The following article is an excellent example of the value of student projects in advancing wound-care practice. Students of the International Interdisciplinary Wound Care Course (IIWCC) at the University of Toronto are required to undertake a selective project to complete the course. Many produce educational activities but few produce patient educational materials, and even fewer evaluate their effectiveness. This project is a good example of the process of identifying a problem through practice reflection, designing and implementing an intervention, and then closing the loop by evaluating that intervention to determine whether or not the intervention achieved the desired change in knowledge, skills or attitudes. The project also demonstrates the effective use of resources. The skills and talents of multiple departments in the health centre were used in completion of the project. Effective wound care is truly interdisciplinary. One of the objectives of the IIWCC is to produce wound-care leaders. This project is one of many truly outstanding efforts on the part of our course participants.

pproximately 15 per cent of all patients with diabetes mellitus will develop a foot or leg ulcer at some time during the course

of their disease. The majority of lower limb amputations are preceded by a foot ulceration.<sup>1</sup> Eighty four per cent of diabetic foot ulcers can be attributed to external factors, such as ill-fitting shoes and socks, mechanical trauma, stress ulcers and paronychia.<sup>2</sup> Persons newly diagnosed with diabetes must have the opportunity to learn proper foot-care practices. Exposure to current best-practice foot-care recommendations and the incorporation of those practices into their daily lives may help patients prevent future wounds and possible amputation. The American Diabetes Association estimates that learning proper foot care and dealing with foot problems early can prevent 50 per cent of amputations among people living with diabetes.<sup>3</sup>

While developing educational strategies and materials for an inpatient amputee rehabilitation population (80 David H. Keast, MSc, MD, FCFP, Co-director IIWCC

per cent diabetics), it became clear that access to a demonstration of best practice diabetic foot care was lacking in our amputee program as well as in local wound clinics, doctors' offices and diabetes referral centres. A study by De Berardis et al. found that "those patients who had received foot education and had their feet examined were significantly more likely to regularly check their feet."<sup>4</sup> The reality for many clinics is that they do not have the resources or the time necessary to devote to individual foot-care demonstrations. In many clinics, teaching videos have been developed to educate patients and families on specific aspects of their disease.

After the success of developing a foot-care-education video specifically for the amputee population served through the Inpatient Rehabilitation Program at Parkwood Hospital, St. Joseph's Health Care in London, Ontario, it was felt that a similar teaching tool could be developed for the newly diagnosed persons with diabetes, but presented from the perspective of the Amputee Rehabilitation Program. The content of the video was based on current best practice guidelines.<sup>5,6</sup> Video production was provided by the hospital's Media Services Department with support from the Amputee Rehabilitation Program. While teaching videos can be an efficient use of time in an outpatient setting, are they effective in changing patient's perceptions of the importance of proper foot care? To answer this question, a pre-test, post-test instrument was developed.

#### **Objective**

The objective was to measure the extent to which the foot-care teaching video was effective in altering the perception of the importance of foot care in persons newly diagnosed with diabetes mellitus type 2 who were referred to a diabetes education centre.

#### **Methods**

The change in perception of the importance of foot care and actual foot-care knowledge was tested using a pre-test, post-test and one-month follow-up multiple-choice questionnaire (see Figures 1–5). The individual questions in the questionnaires were designed to test perception and knowledge of the key information points in the video. To determine content validity several wound-care experts, an epidemiologist, and members of the Quality Measurement Department at Parkwood Hospital reviewed the questionnaires.

The participants were a convenience sample of person's newly diagnosed with type 2 diabetes that had been referred to the Lawson Diabetes Education Centre in London, Ontario. The inclusion criterion was all patients newly diagnosed with type 2 diabetes referred for diabetes education to a specific diabetes nurse educator. Persons who did not wish to complete the questionnaire were excluded from the study. Other exclusion criteria included cognitive impairment, persons under 18 years of age, visual or hearing loss that would preclude viewing the video and persons who did not speak English.

After obtaining written consent, one diabetes nurse educator administered the pre-video questionnaire and then showed the video. The educator administered the post-video questionnaire after the participants viewed the video. Upon completion of the post-video questionnaire, the participants self-addressed an envelope that contained a second postage-paid envelope. Inside *continued on page 22*  Figures 1–5: Change in respondent's perception or awareness before, after, and upon follow-up.











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#### **Pre-video Questions**

## 1. How much foot care education have you received since you were told you have diabetes?

Of the 41 respondents who answered this question, almost 76 per cent indicated that they had no prior foot-care education and 15 per cent indicated having less than five minutes of education. Six people included comments about the amount of education they had received prior to the video presentation. Some comments included:

- "But [I] have read about foot care, looked [it] up on Internet, etc."
- "Mentioned in many brochures and other info, but none in terms of anything other than passing mention in programs by instructors."
- "None! Till today."
- "I would like to learn a lot about feet."
- "Foot care, until I came to the Lawson clinic, was never brought up."

#### 2. Is the amount of education you have received on diabetic foot care since your initial diagnosis of diabetes (about right, too much, not enough)?

Ninety-two per cent of respondents indicated that the amount of education they had received was not enough (n=38). Six people included the following comments about the amount of education they had received prior to the video presentation:

- "Only diagnosed three weeks ago."
- "Probably need more."
- "Never received instructions on foot care."
- "Need more education."
- "We should be told of this part of it."
- "Doctor on vacation right after diagnosis."

#### **Immediate Post-video Questions**

#### 1. Is the amount of education you have received on diabetic foot care since your initial diagnosis of diabetes (about right, too much, not enough)?

Among respondents, 73.2 per cent indicated that the amount of education was "about right"; however, there were still 26.8 per cent who found that they did not have enough education. Ninety-eight per cent of respondents indicated that watching the foot-care video was a "good to excellent" way to learn about caring for one's feet. Seven people included the following comments about watching the foot-care video:

- "Very clear instruction on the care/importance of looking after your feet."
- "Feel that educating on how to stimulate circulation would be helpful."
- "I would like to hear about socks."
- "Clear and concise presentation. I always wear a wide-toe-box shoe and I do lots of Tai Chi, which has taught me a lot about feet and their care. I have peroneal palsy and diminished sensation/nerve in my right foot—but I'll be extra aware. Thank you!"
- "You should make a copy of this little video available to people who just got diabetes."
- "When I watch a video I look for relevant information and not so much fluff. This video was excellent for relevant info."
- "Have your video available for purchase."

#### **One-month Follow-up Questions**

### 1. Have you followed the recommendations from the foot-care video?

At the time of the one-month follow-up, 42 per cent of respondents indicated that they had followed the recommendations made in the video. The distribution of responses is shown in Figure 6.



Perceived Adherence to Video Recommendations

#### 2. What are the areas that I need additional support regarding my foot care?

Seventeen of the 25 respondents included comments. Five main themes emerged about what education was needed:

- Nail care (six comments)
- Fitting shoes properly (three comments)
- More general foot-care education (four comments)
- Circulation (one comment)
- No education required (three comments)

#### **Additional Comments**

Some participants also included more general comments. Three representative quotes follow.

"I found this video very informative and am aware that as my diabetes worsens I may lose sensation in my feet, as one participant was surprised to discover he did not have sensation in one great toe. I now know this could happen to me as well so I always need to be checking. Thank you."

"I did not realize the extent of problems that may occur with diabetes."

"Your video was extremely useful. I was oblivious to the loss of touch sensation, and to advise me to use a mirror and my eyes is so valuable for me to know. I have always been careful about my feet, since I have a reconstructed right ankle and peroneal palsy, but the basics you provided are ones I really needed to know."

#### Discussion

It is interesting to note that 91 per cent of the referrals had minimal or no foot-care education prior to viewing the video. It would indicate that in this region, the health-care providers making the diagnosis of type 2 diabetes are depending on the diabetes education centre to provide all of the necessary foot-care education to the clients. This underscores the need to provide consistent best practice education on preventative foot care.

The improved scores in self-perceived knowledge are mirrored in the actual foot-care knowledge scores. Figure 1 demonstrates a large increase in perceived knowledge of foot care after viewing the video, with a small drop in the one-month follow-up. This compares favourably with the results of the actual foot-care knowledge question on the best way to examine one's feet (see Table 1). In all of the five self-perceived knowledge questions (Figures 1, 2, 3, 4 and 5), there was a substantial improvement in scores at the postvideo testing point compared with pre-video testing. In three out of the five questions, the participants were still reporting improved levels at the one-month follow-up (Figures 2, 3 and 4). Results from questions regarding actual foot-care knowledge showed the same trend in two out of the four questions. The congruence between the perception of increased knowledge and the percentage of respondents choosing the correct response in the knowledge testing questions suggests that the video was effective both in raising awareness of the proper foot care and in communicating proper foot-care knowledge.

The one-month follow-up questionnaire was an attempt to test the retention of the information presented in the video. It is remarkable that 59 per cent of the participants completed and returned the onemonth follow-up questionnaire. The high response probably relates to the use of a mailed-out questionnaire with a stamped return envelope. It also may relate to the participant's impression of the importance of the information contained in the video. The high retention of information contained in the video is also worth noting. In general terms, unless new knowledge is reinforced, it is likely to be lost within weeks of the initial educational activity. It can be argued that only those people who had retained the information in the video chose to complete the follow-up questions, thus skewing the results. On the other hand, it can also be argued that the video was very effective in that nearly 60 per cent of those who viewed the video still retained the knowledge one month later.

Knowing and doing are not the same thing. The survey ultimately relies on the participants' self-reporting of the incorporation of the video information into their lives. Over 90 per cent of the respondents indicated that they had incorporated some or all of the teaching in the video. Putting this into context, this means that 24 of the original 42 people (57 per cent) who watched the video were now attempting to implement at least some of the best practice preventative foot care illustrated in the video. While the self-reporting nature of the survey may be seen as a weakness of the study, even if the respondents are only implementing half of what they report they are, it marks a major improvement in preventative foot care.

#### Conclusions

The general trend of the responses from the questionnaires indicates that the video was effective in altering the perception of the importance of foot care in people newly diagnosed with type 2 diabetes. The results also indicated that a large proportion of the participants retained a significant amount of information immediately and one month after viewing the video. A high percentage of the patients enrolled in the survey reported an incorporation of best practice foot care into their daily lives.

Longer term retention of the information in the video and the positive effect on perceptions of the importance of foot care are unknown. A survey over a period of years would be useful in determining the long-term effect. Also, a longer term study looking at the incidence of neuropathic foot ulcers in the study population might demonstrate the video's effectiveness in preventing diabetic foot complications. It cannot be emphasized enough that the video should not be left to stand on its own, but can be used by concerned clinicians as a valuable teaching tool to communicate best practice information in a consistent way. When coupled with regular foot examinations by a health-care provider and ongoing educational activities, it could prove valuable in preventing foot complications. "

#### Acknowledgement

The authors wish to express special thanks to Jean Jewitt, RN, CDE, for her help with this project.

Copies of the video are available for a nominal charge by contacting the author by e-mail at kyle.goettl@sjhc. london.on.ca.

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