



UNIVERSIDAD NACIONAL DE COLOMBIA

Design of an e-Learning Program for Type 2 Diabetes Latino Patients in a Rural Area of Indiana, US

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Design of an e-Learning Program for Type 2 Diabetes Latino Patients in a Rural Area of Indiana, US

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“How very little can be done under the spirit of fear.”

Florence Nightingale, As quoted in *The Book of Positive Quotations* (2007) by John Cook, p. 479

“Let the future tell the truth and evaluate each one according to his work and accomplishments. The present is theirs; the future, for which I really worked, is mine.”

Nikola Tesla, as quoted in *Tesla, Master of Lightning* (1999) by Margaret Cheney, Robert Uth, and Jim Glenn, p. 73

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Abstract

Background: It is important to address diabetes in order to decrease the negative impact on quality of life and prevent economic and health consequences; additionally, there is an increasing interest and activities on eHealth to provide education about diabetes. Latino population has one of the higher diabetes diagnosis rates in the country and in many cases this population has a poor literacy level. The main question is: is it possible to create new eHealth resources for low literacy type 2 diabetes Latino patients who obtain health care in a Family Health Clinic of Indiana?

Objective: To design an e-learning program for type 2 diabetes Latino patients with low literacy level in one family health clinic of Indiana.

Methodology: The design is an evaluation of a public health program based on the CDC framework for programs evaluation. Three activities were done: Creation of the e-learning tool, translation of a web portal from one rural clinic and validation with a group of patients.

Results: The results are explained through six steps according with the CDC framework: 1) Engage stakeholders 2) Describe the program 3) Focus the Evaluation 4) Gather credible evidence 5) Justify conclusion and 6) Sharing lessons learned. Three were the main results: construction of an e-learning curriculum, analysis of existing resources and results from a pilot study of the e-learning.

Keywords: Community Health, Public Health, Nursing, Health promotion and prevention, vulnerable population.

Contents

1. Background	14
1.1 Characteristics of Latino Population	14
1.2 Diabetes.....	14
1.3 E-learning.....	15
2. Problem Statement	17
2.1 Purpose.....	17
2.2 Objective	17
2.3 Assumptions and Limitations	17
3. Conceptual Framework	19
3.1 Diabetes:.....	19
3.2 Diabetes self-management:.....	19
3.3 E-learning:.....	20
3.4 Health Literacy:	20
3.5 Latino Population:.....	20
4. Literature Review	21
4.1 CDC Framework for Program Evaluation	21
4.1.1 Engage Stakeholders:.....	21
4.1.2 Describe the program:	22
4.1.3 Focus the evaluation.....	23
4.1.4 Gather Credible Evidence:.....	23
4.1.5 Justify Conclusions:	24
4.1.6 Ensure Use of Evaluation Finding and Share Lessons Learned.....	24
5. Methodology	25
5.1 Engage Stakeholders	25
5.2 Describe the Program	26
5.3 Focus the Evaluation.....	28
5.4 Gather Incredible Evidence	28
5.5 Justify Conclusions.....	29
5.6 Ensure use of Evaluation Findings and Share Lessons Learned	29
5.7 Ethical aspects of Research	29
6. Results and Conclusion	30
6.1 Engage Stakeholders	30
6.2 Describe the Program	30
6.3 Focus the Evaluation.....	31
6.4 Gather Incredible Evidence	32

6.4.1	Translation of web portal for patients.....	32
6.4.2	Analysis of existing resources	32
6.4.3	Pilot Study with a Group of Patients	33
6.5	Justify Conclusions	41
6.6	Ensure use of Evaluation Findings and Share Lessons Learned.....	42
Appendices		43
A.	Appendix: Videos & Transcriptions	43
B.	Informed Consent.....	55
C.	Appendix: Questionnaires for Patients Evaluation	56
D.	Appendix: Webpages found with diabetes prevention materials.....	62
References		65

List of Figures

Figure 5-1 Logic Model proposed for the program	27
Figure 6-1 Audiovisual and written resources found (n=41)	32
Figure 6-2 Web Sites Topics According with Self-management Areas (n=41)	33

List of Tables

Table 5-1 Components of the E-learning program.....	26
Table 5-2 Focused evaluation components.....	28
Table 5-3 Indicators of Evidence.....	28
Table 6-1 DSME chosen areas.....	31
Table 6-2 Number of answers for each questionnaire.....	34
Table 6-3 Descriptive Analysis for Questionnaire 1.....	35
Table 6-4 Kolmogorov-Smirnov Normality Test for Questionnaire 1.....	35
Table 6-5 Paired Samples t-test for Questionnaire 1.....	35
Table 6-6 Descriptive Analysis for Questionnaire 2.....	36
Table 6-7 Kolmogorov-Smirnov Normality Test for Questionnaire 2.....	36
Table 6-8 Descriptive Analysis for Questionnaire 3.....	37
Table 6-9 Kolmogorov-Smirnov Normality Test for Questionnaire 3.....	37
Table 6-10 Paired Samples t-test for Questionnaire 3.....	37
Table 6-11 Descriptive Analysis for Questionnaire 4.....	38
Table 6-12 Kolmogorov-Smirnov Normality Test for Questionnaire 4.....	38
Table 6-13 Paired Samples t-test for Questionnaire 4.....	38
Table 6-14 Descriptive Analysis for Questionnaire 5.....	39
Table 6-15 Kolmogorov-Smirnov Normality Test for Questionnaire 5.....	39
Table 6-16 Descriptive Analysis for Questionnaire 6.....	40
Table 6-17 Kolmogorov-Smirnov Normality Test for Questionnaire 6.....	40
Table 6-18 Paired Samples t-test for Questionnaire 6.....	40
Table 6-19 t-test Results for each Questionnaire.....	41

Introduction

The present research project has been done in the framework of an Undergraduate Research Experience between Universidad Nacional de Colombia and Purdue University. It has been coordinated by these both public organizations with the main objective of growing the research spirit in the Colombian Students and increasing the opportunities for them (for us) to get a post-graduate degree abroad. Nevertheless, in my own basis, this has been also the opportunity to rediscover myself, to test my skills, my abilities, my knowledge, and most that all, my own values as a Colombian citizen.

The project has been designed as a Public Health program evaluation, which means that at the same time that the project was being developed, the researcher (me) was performing an evaluation of each component of the program. Apparently, externally, this project may look as just one small step for research, but it has been the biggest leap for the author.

Finally, but not less important, is the socio-political calling that makes part of this project: It is time for this world, for the science, for the technology, for the arts and for the healthcare to turn the eyes to those who have suffered the indifference of the system, any system, during many years.

Carlos Andrés Sarmiento Hernández
West Lafayette, Indiana-USA
December 1st of 2015

1. Background

1.1 Characteristics of Latino Population

There are three important topics to be addressed. The first one are the characteristics of Latino population in United States of America and in the state of Indiana. Currently, Latino-Hispanic group represents 17.4 % of the total United States population (U.S. Census Bureau, 2014; Colby & Ortman, 2014). It is estimated that in 2060, this group will represent 28.6 % of the total country population (Colby & Ortman, 2014). With regard to the state of Indiana, those of Latino ethnicity represent 6.2 % of this population, which equates to 6,514,861 people (U.S. Census Bureau, 2014). It should be noted that in this state, 72.4 % of the population live in urban areas, while 27.55 % of people live in rural zones. Regarding the age, the mean age of Latino population is 23.5 years, with 57% of people being between 18-64 years old and 3.3 % being over 65 years (U.S. Census Bureau^b, 2014).

1.2 Diabetes

The second important topic is Diabetes. This is a chronic disease that is affecting the life quality and health around the United States and the world (WHO, 2014). According to the National Health Interview Survey (2014), 8.6 % (21,319,000 of people) of adults aged 18 and over in the United States had ever been told by a health professional that they had diabetes. In terms of ethnicity, 12.2% of the Latino population were told they have

diabetes, compared with 7.3% of those who report as white and single and 13.2% of black or African American and single population. During their lifetime, half of the Hispanic/Latino population are predicted to develop diabetes type 2 at some point of their lives (CDC, 2014).

Physical activity and exercise has been pointed as one of the most important interventions to prevent Diabetes and complications of the disease. Regarding physical activity levels, it has been found that latino adults (16%) are less likely to met the guidelines for aerobic and muscle-strengthening activity than non-hispanic white adults (Blackwell & Clarke, 2014).

1.3 E-learning

In relation to e-health and e-learning, Hardiker & Grant conducted a literature review in 2011 about factors that may influence engagement by the public with e-Health services. They found that non-white population is less likely to use internet and that higher level of education and literacy are associated with higher levels of Internet use (Hardiker & Grant, 2011). Based on these results, one of the recommendations of the study is to target efforts to improve computer and internet access towards those who are underserved due to age, ethnicity, education, etc. (Hardiker & Grant, 2011).

According to the Pew Research Center survey about Latinos and Technology Adoption, three key demographic characteristics are correlated with technology adoption among Latino population: age, educational attainment and annual family income (Lopez, Gonzalez & Patten, 2013). Regarding smartphone or computer ownership, rates are lowest among Hispanics ages 65 and older; the highest smartphone or computer ownership rates are among Hispanics from families with annual incomes of \$50,000 or more. The educational attainment of those who are more likely to own a smartphone or computer is High School and College (Lopez *et al*, 2013). These trends show that Latino population who is older, have low incomes and low educational levels are not adopting technology as fast as the rest of Latinos.

The adoption of technology allows people who live with Diabetes to find information about their disease and actions that can be made to prevent complications. Also, Internet resources help to take decisions about behavior changes for those who live with Diabetes and need to improve their levels of exercise or change the type of diet they have (Haddad, 2013).

2. Problem Statement

As has been noted, it is important to address diabetes in order to decrease the negative impact on quality of life and prevent economic and health consequences; Additionally, there is an increasing interest and activities on eHealth to provide education about diabetes (U.S. Department of Health and Human Services [HHS], 2015; HHS^b, 2015).

The Latino population has one of the higher diabetes diagnosis rates in the country and in many cases this population has a poor literacy level (Kutner, Greenberg & Paulsen, 2006). The main question is: *is it possible to create new eHealth resources for low literacy type 2 diabetes Latino patients who obtain health care in a Family Health Clinic of Indiana?*

2.1 Purpose

To make more efficient and acceptable the health care provided to low literacy type 2 Diabetes Latino patients who obtain health care in the Family Health Clinic of Monon.

2.2 Objective

To design an e-learning kit for type 2 diabetes Latino patients with low literacy level in one family health clinic of Indiana.

2.3 Assumptions and Limitations

- It is possible to design an e-learning kit for diabetic patients with low literacy level.

- E-learning access will improve diabetes self-management of low literacy Diabetes type 2 Latino patients.
- Time period: Six months is a short period of time to design and implement the e-learning kit.

3. Conceptual Framework

The following concepts are important definitions for the research:

3.1 Diabetes:

Diabetes is a metabolic disorder with multiple causes, characterized by chronic hyperglycemia (elevated blood-glucose in the organism) with effects in the metabolism of carbohydrates, fats and protein, as a result of inadequate insulin production or action (WHO, 2013)

3.2 Diabetes self-management:

According with the National Standards for Diabetes Self-management education (Funnell, Bronw *et al*, 2011), *“Diabetes self-management education (DSME) is the ongoing process of facilitating the knowledge, skill, and ability necessary for diabetes self-care. This process incorporates the needs, goals, and life experiences of the person with diabetes and is guided by evidence-based standards.”* The purpose of diabetes self-management is to support:

Informed decision-making,
Self-care behaviors,
Problem-solving
Active collaboration with the health care team

All the activities that are addressed to improve diabetes self-management are expected to improve clinical outcomes, health status, and quality of life for the people (Funnell *et al*, 2011).

3.3 E-learning:

The CDC e-learning group provides the following definition of e-health: *“instruction accessed through computerized electronic technologies, such as the Internet, intranet, compact disc, mobile devices, or other digital media”* (CDC, 2014). In the context of this study, e-learning is a method used to facilitate self-management education with Diabetes type 2 Latino patients.

3.4 Health Literacy:

As defined by the American Medical Association, Health literacy is *“a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the healthcare environment. Patients with adequate health literacy can read, understand, and act on health care information”* (Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, American Medical Association, 1999).

Health literacy is a barrier and also a problem to deal with in this project. That is because the potential users of the e-learning kit are people who have low literacy level. This means that they experience difficulty to understand medical and health terminology, and at the end, acting on the information that they nurses provide about diabetes.

3.5 Latino Population:

The term Latino refers to the people who come from countries located in Central/South America. For the design of the e-learning kit, the language used is Spanish.

4. Literature Review

4.1 CDC Framework for Program Evaluation

The CDC framework for program evaluation in public health is a model which was developed in 1999, with the objective of summarizing and organizing the elements of program evaluation (CDC, 2011). According to the CDC framework, a program evaluation is a systematic collection of information about the activities, characteristics, and outcomes of programs to make judgments about the program, improve program effectiveness, and/or inform decisions about future program development (CDC, 2011). The CDC Framework is composed by six steps, which are:

1. Engage stakeholders
2. Describe the Program
3. Focus the Evaluation
4. Gather credible Evidence
5. Justify conclusions
6. Ensure use of evaluation findings and share lessons learned

It is also based on the following four standards: utility, feasibility, propriety and accuracy.

4.1.1 Engage Stakeholders:

This stage is used to identify, involve and ensure participation of stakeholders who are interested in the program and the results. Stakeholders can be of three types: Those involved in program operations, those who are directly affected and those who are users of the evaluation results. Stakeholders are important because they can increase

credibility, implement interventions, authorize or fund the continuation or expansion of the program.

4.1.2 Describe the program:

The objective in this step is creating a complete description of the program and how it functions. In this stage, the CDC Guidelines recommends the use of a logic modeling tool (CDC, 2011) to depict the complete program. The components of the logic modeling tool are:

Need: Definition of the public health problem that the program aims to address.

Targets: Determine which population groups or organizations have the need.

Outcomes: The change expected to occur in the population. These can be defined in terms of time: short-term, middle-term or long-term outcomes.

Activities: The specific actions that the program and its staff do in order to achieve the outcomes/objectives.

Outputs: Refers to tangible products or capacities, not necessarily related to changes (outcomes). An example of this is the total amount of hours given in a teaching intervention.

Resources/Inputs: Resources that comes from the larger environment and are needed for the program function.

Relationship of Activities and Outcomes: The possible effect of the activities on the achievement of outcomes.

Stage of Development: Refers to where the program stage is: planning, implementation or it has already developed for a long time.

Context: Consideration of factors from the environment that influence the program performance.

4.1.3 Focus the evaluation

This stage includes determining the appropriate design for the evaluation. According to the CDC framework, evaluation is considered as “*an ongoing activity over the life of a program that asks, Is the program working?*” (CDC, 2011) This stage includes:

Define purpose and users of the evaluation

Determine components of the logic model that should be part of the focus

Review the design options (Experimental, quasi-experimental and observational)

4.1.4 Gather Credible Evidence:

Gathering evidence refers to the obtainment of data, like a research or data-oriented project. This Step includes the following components

Indicator: In this component, the CDC recommends to develop own or draw on existing indicators developed by others.

Sources of evidence/methods of data collection: In data collection it is possible to find primary and secondary sources of data. Mixed-methods approach to data collection should be considered. The most common primary data collection methods are:

- Surveys, including personal interviews, telephone interviews, and instruments completed by respondent, received through the mail or e-mail
- Group discussions/focus groups
- Observation
- Document review, such as medical records, but also diaries, logs, minutes of meetings, etc.

Quality and Quantity of data

Logistic: Here, the CDC recommends developing a detailed protocol for data collection.

4.1.5 Justify Conclusions:

This step encompasses analyzing the evidence, making claims about the program based on the analysis, and justifying the claims by comparing the evidence against stakeholder values.

Data analysis is the process of organizing and classifying the collected information, tabulating it, summarizing it, comparing the results with other appropriate information, and presenting the results in an easily understandable manner.

4.1.6 Ensure Use of Evaluation Finding and Share Lessons Learned

The purpose in this final stage is using the information to improve programs. The evaluation results can be used to demonstrate the effectiveness of a program, identify ways to improve it, modify program planning, demonstrate accountability, and justify funding. Finally, an evaluation program must consider the limitations of the evaluation: Possible biases, validity and reliability of results

5. Methodology

The design is an evaluation of a public health program based on the CDC framework for programs evaluation. The following are the proposed actions for every stage of the program:

5.1 Engage Stakeholders

For this stage, several meetings were planned with people/organizations involved in the attention of Latino population. The organizations involved the following:

Family Health Clinic of Monon

Staff: Advance Practitioner Nurses from the Clinic.

Purdue University Human and Health Sciences Extension

Staff: Diabetes educators from Purdue extension in White County.

5.2 Describe the Program

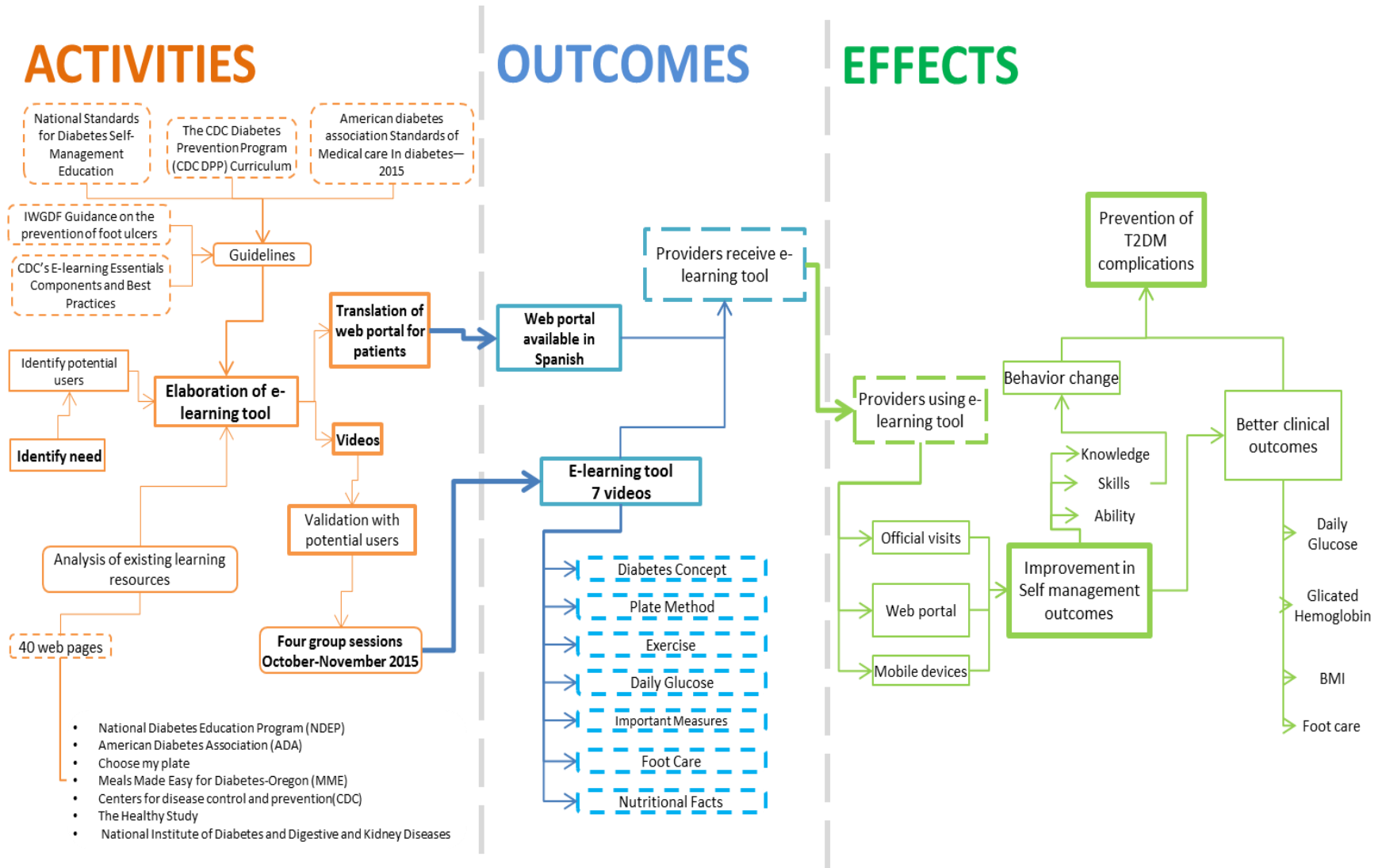
The following are the components of the program

Table 5-1 Components of the E-learning program

Need	<ul style="list-style-type: none"> Addressing Diabetes self-management in Latino patients with low literacy level. Provide a tool for Health Care providers and extension educators who work with Latino people living with Diabetes.
Target Groups	<ul style="list-style-type: none"> Latino patients with diagnosed diabetes type 2 and their families Providers Extension educators
Outcomes	<p>Short term:</p> <ul style="list-style-type: none"> Providers receiving e-learning tool completed. <p>Medium term:</p> <ul style="list-style-type: none"> Providers using e-learning tool. Patients and families using e-learning Improvement in self-management outcomes: knowledge, skills and abilities. <p>Long term:</p> <ul style="list-style-type: none"> Decrease in diabetes complications for the selected population
Activities	<ul style="list-style-type: none"> Creation of the e-learning tool Translation of a web portal from one rural clinic in Indiana in order to make the e-learning available through internet. Validation with a group of patients.
Outputs	<ul style="list-style-type: none"> Web page translated in a Spanish version E-learning tool based in evidence
Resources /Inputs	<p>Official diabetes educational resources from:</p> <ul style="list-style-type: none"> The Center for Disease Control and Prevention (CDC), the National Diabetes Education Program (NDEP) The American Diabetes Association (ADA) The National Diabetes Prevention Program (NDPP) The International working group for the diabetic foot (IWGDF).
Stage of Development	Planning

Additionally, a logic model (also called conceptual map or program hypothesis) has been designed for the program (Figure 5-1).

Figure 5-1 Logic Model proposed for the program



5.3 Focus the Evaluation

In this evaluation, the design is observational and descriptive. The purpose of the evaluation is collect information about the process of designing the e-learning program. The final users of the evaluation results are the stakeholders interested in using the e-learning tool with Latino patients (providers or diabetes educators).

The components of the logic model (Figure 5-1) part of the focused evaluation are shown in Table 5-2:

Table 5-2 Focused evaluation components

Stage	Logic Model Components
Activities	<ul style="list-style-type: none"> • Elaboration of e-learning tool • Translation of web portal for patients • Validation with potential users • Analysis of existing resources
Outcomes	<ul style="list-style-type: none"> • Curriculum of e-learning program. • Providers receive e-learning program.

5.4 Gather Incredible Evidence

The indicators proposed for the program are shown in Table 5-3

Table 5-3 Indicators of Evidence

Indicators	Data collection Method/Sources
Web portal will be translated in a Spanish version.	<ul style="list-style-type: none"> • Document of translation
Analysis of existing resources for diabetic patients will be performed	<ul style="list-style-type: none"> • Matrix of web resources analyzed • Analysis of data
E-learning videos for patients will be completed	<ul style="list-style-type: none"> • Videos • Transcripts with references • Curriculum of the program

A pilot inquiry with patients will be realized	<ul style="list-style-type: none"> • Number of people participating • Surveys (See Appendix C) • Improvement in knowledge and skills level (self-management) through Statistical Analysis.
Providers will receive the e-learning tool	<ul style="list-style-type: none"> • Number of providers who receive the e-learning tool • Report delivered to the clinic

5.5 Justify Conclusions

In this part of the program evaluation process, the obtained results of the program between the months of June-November 2015 were compared with results of previous projects that have been found through journal publications.

5.6 Ensure use of Evaluation Findings and Share

Lessons Learned

For this stage, it is expected to present the results of the program evaluation in a symposium with participants from Purdue University and Universidad Nacional de Colombia on December 8th 2015. A complete report will be delivered to the Family Health Clinic of Monon and Purdue School of Nursing.

5.7 Ethical aspects of Research

The main ethical aspects of the research are driven by the Health Insurance Portability and Accountability act (HIPAA). According with this normative, human subjects research disclosures require approval by the IRB and signed informed consent (authorization from individuals). Researcher must obtain an HIPAA/IRB authorization prior to receiving any protected health information. In order to accomplish with ethical issues, an informed consent was delivered to the participants of session groups for

6. Results and Conclusion

6.1 Engage Stakeholders

Several meetings were held with Advance Practitioner Nurses from the Family Health Clinic of Monon, IN and Diabetes extension educators from White county, IN. During these encounters the stakeholders specify several issues related to Health education with diabetes population:

- Existence of many patients who come from Latin America or are Spanish-speakers and live in rural areas of Indiana.
- A high prevalence of diabetes among this population.
- Poor Latino community involvement with health prevention programs, due to language and cultural barriers.
- Difficulty from part of Latino population to mobilize from their homes/workplaces to places to receive education about self-management.

These issues provided a starting point to formulate a program directed to Latino population about diabetes self-management.

6.2 Describe the Program

For a detailed description of objectives, needs, activities and outcomes, please go over Table 5-1. In this chapter, the curriculum of the program will be described.

The curriculum was developed according with the National Standards for Diabetes Self-management education (Funnell *et al*, 2011). The areas that were considered for the project are presented in Table 6-1.

Table 6-1 DSME chosen areas

DSME areas (Pubmed 3)	E-learning video (See appendix B for transcriptions)
1. Describing the <i>diabetes disease process and treatment options</i>	Animated video 1 (See appendix B.1)
2. Incorporating <i>nutritional management</i> into lifestyle.	Animated video 5 Animated video 7 (See appendix B.5 and B.7)
3. Incorporating <i>physical activity</i> into lifestyle.	Animated video 6 (See appendix B.6)
4. <i>Monitoring blood glucose</i> and other parameters and interpreting and using the results for self-management decision making.	Animated video 2 Animated video 4 (See appendix B.2 and B.4)
5. Preventing detecting, and treating <i>chronic complications</i>	Animated video 3 (See appendix B.3)

6.3 Focus the Evaluation

As shown in Table 5-2, the evaluation is focused in the following components:

- Translation of web portal for patients
- Analysis of existing resources
- Curriculum of e-learning program.
- Validation with potential users
- Providers receive e-learning program.

6.4 Gather Incredible Evidence

6.4.1 Translation of web portal for patients

As a possible resource to enhance the communication between the patients and the providers at the Family Health Clinic (FHC), having the web portal of the clinic in a Spanish version was considered as useful. In order to have this done, the original web portal in English was translated and the translation was delivered to the Nurse in charge of the web design and maintenance. The Spanish translation is available in Appendix A.

6.4.2 Analysis of existing resources

An analysis of online resources available for diabetes education was performed. 41 (forty one) different webpages from organizations related with diabetes prevention were found on the internet (See Appendix D). From the total web pages, 12 % (n=5) were found to have audiovisual materials (Figure 6-1). An analysis of the self-management areas showed that the main topics addressed through the webpages resources are behavior change (n=42) followed by nutrition (n=43) and exercise (n=29). In Spanish language, the main resources available were about nutrition (n=14), followed by behavior change (n=14) and exercise (n=17).

Figure 6-1 Audiovisual and written resources found (n=41)

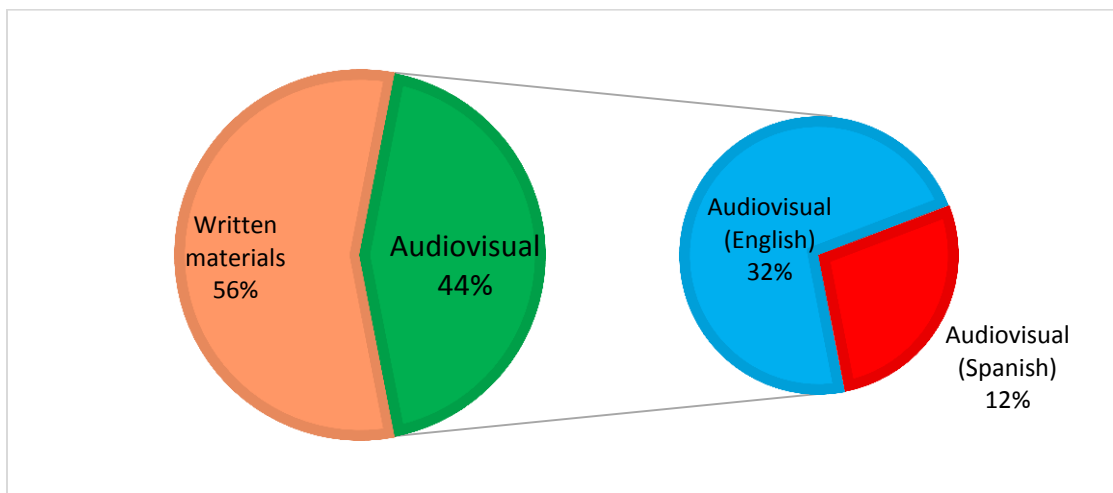
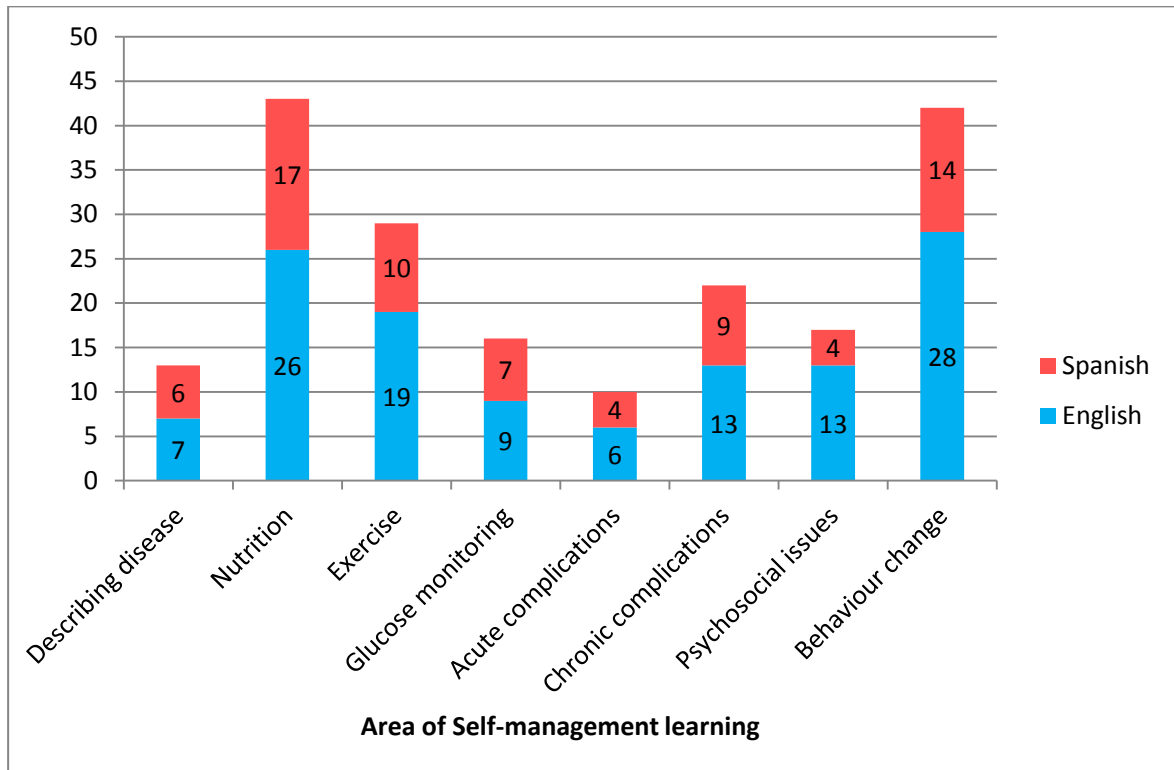


Figure 6-2 Web Sites Topics According with Self-management Areas (n=41)



6.4.3 Pilot Study with a Group of Patients

In order to establish the effectiveness and the feasibility of using the e-learning tool as an educational resource for Latino people living with diabetes, a pilot inquiry was made between October-November 2015. With the help of the Diabetes Extension Educator from White County, four group sessions were organized.

- **Participants**

People living with diabetes and their families were invited to participate in group sessions in on Family Health Clinic of Purdue University School of Nursing.

- **Method and data analysis**

In each session, the videos of the e-learning tool were showed to the participants and the knowledge acquired for the patients was assessed using a pre-test and post-test

questionnaire for each video (See appendix C). Each questionnaire was composed by four questions related to the video thematic. The responses for each questionnaire were rated from 0 to 4 according with the right answers. The data was analyzed after using SPSS 23 licensed for use by iTap services in Purdue University.

The data obtained was analyzed for normality distribution using the Kolmogorov-Smirnov test. For the normal distributions, a dependent t-test was performed to establish if there was any statistically significant improvement in self-management knowledge after of using the e-learning tool. The hypothesis, in this case, was the following:

$$H_0 = \mu_2 (\text{Post-test value}) \leq \mu_1 (\text{Pre-test value})$$

$$H_1 = \mu_2 (\text{Post-test value}) > \mu_1 (\text{Pre-test value})$$

- **Results**

15 participants participated in the sessions; nevertheless, different people participated in each session (see table 6-2). 46.7% of the participants were man and 53.3% were women. The mean age of the participants was 38.73 (SD= 15.04; range 13-55 years).

Table 6-2 Number of answers for each questionnaire

Questionnaire	Number of participants
Questionnaire 1	6
Questionnaire 2	5
Questionnaire 3	5
Questionnaire 4	7
Questionnaire 5	7
Questionnaire 6	8

Questionnaire 1: Diabetes Concept

For the first questionnaire, the mean average of the scores obtained was 1.67 (SD= 1.966) in the pretest (PRE01) and 3 (SD= 1.673) for the posttest (POS01) (See Table 6-

3). The Kolmogorov-Smirnov significance value was 0.94, which means that this data was normally distributed (See Table 6-4).

Table 6-3 Descriptive Analysis for Questionnaire 1

	N	Minimum	Maximum	Mean	Std. Deviation
PRE01	6	0	4	1.67	1.966
POS01	6	0	4	3.00	1.673
N	6				

Data analyzed with SPSS Statistics V.23.0.0

Table 6-4 Kolmogorov-Smirnov Normality Test for Questionnaire 1

	Statistic	df	Sig.
PRE01 ^a	.302	6	.094

a. Lilliefors Significance Correction. *Data analyzed with SPSS Statistics V.23.0.0*

Given the normality of the distribution, the t test for paired samples was applied (see Table 6-5). The t value obtained was $t=2.000$ (p value=0.102). With this result, H_0 is retained ($H_0 = \mu_2 \leq \mu_1$).

Table 6-5 Paired Samples t-test for Questionnaire 1

PRE01 - POS01	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
	-1.333	1.633	.667	-3.047	.380	-2.000	5	.102

Data analyzed with SPSS Statistics V.23.0.0

Questionnaire 2: Important measurements

For the second questionnaire, the mean average of the scores obtained was 0.20 (SD= 0.447) in the pretest (PRE02) and 2.6 (SD= 0.548) for the posttest (POS02) (See Table 6-6). The Kolmogorov-Smirnov significance value was 0.001, which means that this data is not normally distributed (See Table 6-7).

Table 6-6 Descriptive Analysis for Questionnaire 2

	N	Minimum	Maximum	Mean	Std. Deviation
PRE02	5	0	1	.20	.447
POS02	5	2	3	2.60	.548
N	5				

Data analyzed with SPSS Statistics V.23.0.0

Table 6-7 Kolmogorov-Smirnov Normality Test for Questionnaire 2

PRE02 ^a	Statistic	df	Sig.
	.473	5	.001

a. Lilliefors Significance Correction. *Data analyzed with SPSS Statistics V.23.0.0*

In this case, the data did not show a normal distribution; therefore, any statistical test was applied.

Questionnaire 3: Plate Method

For the third questionnaire, the mean average of the scores obtained was 3 (SD= 0.447) for the pretest (PRE03) and 4 (SD= 0.00) for the posttest (POS03) (See Table 6-8). The Kolmogorov-Smirnov significance value was 0.161, which means that this data is normally distributed (See Table 6-9).

Table 6-8 Descriptive Analysis for Questionnaire 3

	N	Minimum	Maximum	Mean	Std. Deviation
PRE03	5	2	4	3.00	.707
POS03	5	4	4	4.00	.000
N	5				

Data analyzed with SPSS Statistics V.23.0.0

Table 6-9 Kolmogorov-Smirnov Normality Test for Questionnaire 3

PRE03 ^a	Statistic	df	Sig.
	.300	5	.161

a. Lilliefors Significance Correction. *Data analyzed with SPSS Statistics V.23.0.0*

Given the normality of the distribution, the t test for paired samples was applied. The t value obtained was $t=3.162$ (p value=0.034). With this result, H_0 is rejected ($H_0= \mu_2 \leq \mu_1$). See Table 6-11 for more information.

Table 6-10 Paired Samples t-test for Questionnaire 3

PRE03 - POS03	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
-1.000	.707	.316	-1.878	-.122	-3.162	4	.034	

Data analyzed with SPSS Statistics V.23.0.0

Questionnaire Four: Foot Care

For the fourth questionnaire, the mean average of the scores obtained was 3 (SD= 0.447) for the pretest (PRE04) and 4 (SD= 0.00) for the posttest (POS04) (See Table 6-11). The

Kolmogorov-Smirnov significance value was 0.161, which means that this data is normally distributed (See Table 6-12).

Table 6-11 Descriptive Analysis for Questionnaire 4

	N	Minimum	Maximum	Mean	Std. Deviation
PRE04	7	2	4	2.86	.900
POS04	7	4	4	4.00	.000
N	7				

Data analyzed with SPSS Statistics V.23.0.0

Table 6-12 Kolmogorov-Smirnov Normality Test for Questionnaire 4

	Statistic	df	Sig.
PRE04 ^a	.258	7	.818

a. Lilliefors Significance Correction. *Data analyzed with SPSS Statistics V.23.0.0*

Given the normality of the distribution, the t test for paired samples was applied. The t value obtained was $t=3.162$ ($p\text{ value}=0.034$). With this result, H_0 is rejected ($H_0= \mu_2 \leq \mu_1$). See Table 6-13 for more information

Table 6-13 Paired Samples t-test for Questionnaire 4

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
PRE04 - POS04	-1.143	.900	.340	-1.975	-.311	-3.361	6	.015

Data analyzed with SPSS Statistics V.23.0.0

Questionnaire Five: Exercise recommendations

For the fifth questionnaire, the mean average of the scores obtained was 3.43 (SD= 0.787) for the pretest (PRE05) and 4 (SD= 0.00) for the posttest (POS05) (See Table 6-14). The Kolmogorov-Smirnov significance value was 0.015, which means that the variable is not-normally distributed (See Table 6-15).

Table 6-14 Descriptive Analysis for Questionnaire 5

	N	Minimum	Maximum	Mean	Std. Deviation
PRE05	7	2	4	3.43	.787
POS05	7	4	4	4.00	.000
N	7				

Data analyzed with SPSS Statistics V.23.0.0

Table 6-15 Kolmogorov-Smirnov Normality Test for Questionnaire 5

	Statistic	df	Sig.
PRE05 ^a	.338	7	.015

a. Lilliefors Significance Correction. *Data analyzed with SPSS Statistics V.23.0.0*

Given the non-parametric distribution of the variable, any statistical test was applied.

Questionnaire Six: Nutritional Facts

For the sixth questionnaire, the mean average of the scores obtained was 3.43 (SD= 0.787) for the pretest (PRE06) and 4 (SD= 0.00) for the posttest (POS06) (See Table 6-15). The Kolmogorov-Smirnov significance value was 0.246, which means that the variable is normally distributed (See Table 6-17).

Table 6-16 Descriptive Analysis for Questionnaire 6

	N	Minimum	Maximum	Mean	Std. Deviation
PRE06	8	0	4	2.25	1.165
POS06	8	3	4	3.75	.463
N	8				

Data analyzed with SPSS Statistics V.23.0.0

Table 6-17 Kolmogorov-Smirnov Normality Test for Questionnaire 6

	Statistic	df	Sig.
PRE06 ^a	.290	8	.246

a. Lilliefors Significance Correction. *Data analyzed with SPSS Statistics V.23.0.0*

Given the normality of the distribution, the t test for paired samples was applied. The t value was $t=3.24$ (p value=0.014). With this result, H_0 was rejected. See Table 6-18 for more information.

Table 6-18 Paired Samples t-test for Questionnaire 6

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
PRE06 - POS06	-1.500	1.309	.463	-2.595	-.405	-3.240	7	.014

Data analyzed with SPSS Statistics V.23.0.0

The results suggest that the mean of the questionnaires response was significantly higher after of the intervention with the participants using the videos about plate method, foot care and nutritional facts. For the questionnaires 1, 2 and 5 (diabetes concept, important measurements and exercise recommendations) no significant difference was found after

of using the intervention. It is possible that the small size of the sample resulted in an inadequate statistical taste.

Table 6-19 t-test Results for each Questionnaire

Questionnaire	Pretest		Posttest		t	p
	Mean	SD	Mean	SD		
Diabetes concept	1.67	1.97	3	1.67	2	.102
Important measurements (Daily glucose, HA1C, arterial pressure and lipid-cholesterol)	0.2	0.45	2.6	0.548	-	-
Plate method	3	0.7	4	0.00	3.16*	.034
Foot care	2.86	0.9	4	0.00	3.36*	0.015
Exercise Recommendations	3.43	0.79	4	0.00	-	-
Nutritional Facts	2.25	1.16	3.75	0.46	3.24*	0.14

* $p < 0.05$

6.5 Justify Conclusions

The educational resources available on the web are written in the English language most of the time, and even if a person has an adequate literacy level, it can be very tough to understand some of the indications and advices provided (e.g. calorie/carbs counting, portions and serving sizes). Even when these webpages have developed videos and interactive resources, they are available mostly in English, and as a consequence this can create an access barrier for Latino people with diabetes.

Regarding the e-learning program, through the pilot study statistically significant changes were found in the knowledge level before and after of participating in the program. Nevertheless, given the sample size and the methodology applied (which can lead to II type error) the results are not conclusive and further evaluation is required in order to establish a more evident effectiveness of the program.

6.6 Ensure use of Evaluation Findings and Share Lessons Learned

The results of the project have been shared in academic events in both Universities. As a possible guidance for future evaluations involving the use of the program, the indicators proposed in Table 6-20 are examples of what can be done in the future. Of course, future evaluations of the program depend mainly on how much the program is being used by the providers and educators.

Table 6-20 Future Indicators for Program Evaluation

Component	Indicator
Structure:	<ul style="list-style-type: none"> -Development of tool: Translation of ongoing portal and construction-adaptation of teaching material -Collection of data: Sociodemographic data and interests of patients involved.
Process:	<ul style="list-style-type: none"> -Get patients involved with the portal -Hours of use, Assessments of patient learning (Quantitative), feedbacks (quantitative). -Collection of qualitative data, feelings about the process of being diagnosed and deal with DM
Outcomes:	<ul style="list-style-type: none"> - Socio demographic data of users - Levels of use (At moment of being registered and 2-3 months after) - Levels of knowledge (At moment of being registered and 2-3 months after) - Measures of: Ha1C, weight, BMI, Cholesterol (At moment of being registered and 2-3 months after) - Physical Activity (At moment of being registered and 2-3 months after)

Appendices

A. Appendix: Videos & Transcriptions

1. Diabetes concept

¿Qué es la diabetes tipo 2?

La diabetes tipo 2 (a veces llamada “diabetes mellitus” tipo 2) es una enfermedad que afecta la forma en que tu organismo usa el azúcar.

El cuerpo necesita azúcar para funcionar normalmente. Los niveles de azúcar se disminuyen con ayuda de una sustancia llamada insulina. Si hay poca insulina o si el cuerpo no responde a la insulina, el azúcar se acumula en la sangre. Esto es lo que llamamos diabetes.

Hay dos tipos de diabetes. En la diabetes tipo 2, el problema es que el organismo no responde a la insulina o no produce suficiente.

¿Cuáles son los síntomas?

Por lo general, la diabetes tipo dos no produce síntomas. Cuando hay síntomas, se pueden presentar las siguientes cosas:

Necesidad de orinar más seguido de lo normal

Sed intensa

Visión borrosa

Mayores deseos de comer

¿Cuáles son los problemas de la diabetes?

La diabetes puede provocar problemas graves con el paso del tiempo como infartos, derrames cerebrales, falla renal, problemas de visión como ceguera, amputación de dedos o extremidades.

¿Cómo sé que tengo diabetes?

Generalmente, el médico o enfermero realiza una prueba de sangre para medir su azúcar y así saber si tiene diabetes tipo 2.

¿Cómo se trata la diabetes?

La primera recomendación es que tengas un estilo de vida saludable, esto incluye permanecer activo todos los días realizar mediante el ejercicio y mantener un consumo de alimentos sanos.

Se pueden recetar algunos medicamentos para controlar la azúcar en la sangre. Algunas veces son píldoras o pastillas para que el cuerpo genere más insulina o pueda funcionar la insulina que ya existe. En otras ocasiones se deben aplicar inyecciones de insulina. Es importante que consumas tus medicamentos todos los días en las horas adecuadas.

Recuerda que la mejor alternativa, incluso si ya tienes diabetes y estas usando medicamentos, es realizar ejercicio, bajar de peso y alimentarte en forma correcta, ya que estas actividades mejoran los niveles de salud y ayudan al cuerpo a prevenir enfermedades y controlar los niveles de azúcar en sangre.

References:

About diabetes. World Health Organization. Retrieved 10 October 2015 from: www.who.int/diabetes/action_online/basics/en/index1.html

World Health Organization. (2006). Definition and Diagnosis of Diabetes Mellitus and Intermediate Hyperglycemia. Who. doi:ISBN 92 4 159493 4

Video available through:

<https://www.youtube.com/watch?v=DkPIGfNpuDI>

2. Important Measures (Daily glucose, Lipids, Glycated Hemoglobin, Blood Pressure)

Cosas que debes vigilar

Una vez que se ha diagnosticado diabetes, es importante que lleves un registro sobre algunos factores importantes que nos ayudan a saber cómo está la azúcar en sangre y tu nivel de salud. Te hablaremos de los siguientes factores:

Glucosa diaria

A1C

Presión arterial

Colesterol

1. Medir la glucosa en sangre: Para ello existen 2 pruebas importantes: la glucosa diaria y la prueba de Hemoglobina glicosilada (A1C).

En la glucosa diaria, registramos los valores con ayuda de un pequeño dispositivo llamado glucómetro. La glucosa diaria nos sirve para saber si hay algún alimento que eleve mucho el azúcar, o si existen horas en el día en que los niveles sean demasiado altos. También podemos saber si la azúcar se ha bajado demasiado.

Para la A1C es necesario asistir a una cita en la clínica, en donde tomaran una muestra de sangre. La A1C nos muestra los niveles de azúcar en sangre durante los últimos tres meses.

2. Control de la presión arterial: Esto permite saber cómo está el flujo de sangre en el organismo. Las personas con Diabetes deben cuidar su presión arterial, ya que corren mayor riesgo de sufrir enfermedades cardiovasculares e infartos.
3. Colesterol y triglicéridos: Con esta medida, básicamente podemos saber cómo están los niveles de grasas en tu cuerpo. Tener niveles de colesterol altos también aumenta el riesgo de sufrir infartos, derrames y otros problemas graves. Hay dos tipos de colesterol: HDL y LDL. ¡Ojo! El colesterol LDL es el colesterol malo, y es el que queremos mantener siempre abajo. Al contrario, el HDL se considera como colesterol bueno, y está bien tener niveles elevados de HDL.

Aquí te mostramos una tabla que resume los niveles que debes tener para la glucosa, presión arterial y grasas.

Factor	Valores adecuados
Glucosa diaria (Con glucómetro)	Antes de comer: Entre 70 y 130 mg/dL 1 o dos horas luego de comer: menor a 180 mg/dL
A1C	Menor a 7 %
Presión arterial	Menor a 140/90
Colesterol	Total: menor a 200 mg/dL LDL: menor a 100 mg/dL HDL: mayor o igual a 40 mg/dL Triglicéridos: menor a 150 mg/dL

References:

American Diabetes Association. Glycemic targets. Sec. 6. In Standards of Medical Care in Diabetes 2015. Diabetes Care 2015;38(Suppl. 1):S33–S40

National Diabetes Education Program. 4 Steps to Manage Your Diabetes for Life. Retrieved 09/08/2015 from:

<http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=4> Last reviewed: 04/01/2014

Video available through:

<https://www.youtube.com/watch?v=Ccn9xriuuUI>

3. Foot Care

Cuidando la marcha

La diabetes provoca pérdida de sensibilidad en los pies con el paso del tiempo. Esto significa que puedes tener heridas, cortes o infecciones en el pie y no darte cuenta. ¡Atención! Con el tiempo, se corre el gran riesgo de perder uno de los dedos, el pie o incluso la pierna. Acá te contamos algunos cuidados para mantener sanos tus pies:

1. Revisa tus pies todos los días: asegúrate de no tener ampollas, heridas, hinchazones. Contacta con tu proveedor de cuidado si detectas algo raro.
2. Lava los pies con agua tibia: Mantén los pies limpios a diario. ¡Advertencia! No remojes los pies nunca ni utilices agua caliente. Sécate con una toalla suave.
3. Humecta tus pies: Aplica una loción hidratante por encima y debajo de tus pies, pero no entre los dedos, ya que esto puede producir infección.
4. Corta tus uñas: Para ello utiliza un cortaúñas de pies y córtalas en forma recta y sin redondear las esquinas de la uña.
5. Mantén siempre los pies secos y abrigados
6. Ponte siempre zapatos o chancletas, revísalos por dentro antes de colocárselos y nunca andes descalzo, incluso si estas en casa

References:

Bus, S. A., van Netten, J. J., L.A., L., Monteiro, M., Rasmussen, A., Jubiz, Y., & Price, P. E. (2015). Guidance on the prevention of foot ulcers in at-risk patients with diabetes. IWGDF Working Group on Prevention of Foot Ulcers, 21. doi:10.1002/dmrr.2696

Video available through:

<https://www.youtube.com/watch?v=IV8BWIYrv9U>

4. Daily Glucose

Usando el glucómetro

Este aparato viene acompañado de unas tiras reactivas y unas lancetas (agujas). Existen diferentes modelos, sin embargo el uso es muy similar:

- 1) Lava tus manos antes de usarlo.
- 2) Prepara el glucómetro insertando la tira reactiva.
- 3) Con tus manos limpias, pincha un lado de alguno de los dedos de la mano.
- 4) Depositar la gota de sangre en la tira reactiva.
- 5) El glucómetro indicara el nivel de azúcar que tienes en ese momento.

- 6) Registra el valor que te da el glucómetro.
- 7) Desecha la tira reactiva y la lanceta.

5. Plate Method

Es tiempo de preparar un plato saludable

Primer paso

Usa un plato habitual de almuerzo o cena. No debe pasar 9 pulgadas (inch) de tamaño

Segundo paso

Traza una línea imaginaria por la mitad del plato. ¡Las combinaciones son infinitas!

Ahora vuelve a dividir la mitad que te queda libre en dos. Una de las partes la debes llenar con granos y alimentos con almidón como:

Pan de grano integral, cereal de grano integral y fibra, cereal cocido como avena, maíz machacado o sémola, arroz, fideos, tortillas, frijoles pintos o de carita, papas, arvejas o chícharos, pallares, batata, boniato o camote, zapallo o calabaza, galletas, papitas, o chips con bajo contenido de grasa, pretzels o palomitas de maíz sin grasa.

Recuerda, es un cuarto de tu plato.

Tercer paso

Llena la parte del plato faltante con alguna proteína como:

Pollo o pavo sin piel, pescado como atún, salmón bacalao, barbo o bagre; mariscos como camarones, almejas, ostras, cangrejo o mejillones; cortes magros de carne o cerdo como solomillo o lomo tofu huevos o queso con bajo contenido de grasa.

Tu plato está casi completo.

Puedes agregar una porción de fruta, del tamaño de tu puño cerrado. Agrega una bebida baja en calorías, como agua, té sin azúcar o café.

Algunas recomendaciones

Disminuye al máximo posible el consumo de bebidas con endulzantes

Procura consumir pescado dos veces por semana.

Puedes agregar aguacate a tus ensaladas. Es una fuente natural de grasa

Consume fibra. La puedes encontrar en frutas, vegetales y granos como la avena, nueces y almendras.

Consume poca sal.

Más información en:

www.diabetes.org

www.choosemyplate.gov

References:

Camelon, K. M., Hådel, K., Jämsén, P. T., Ketonen, K. J., Kohtamäki, H. M., Mäkimatilla, S., ... Valve, R. H. (1998). The Plate Model: a visual method of teaching meal planning. DAIS Project Group. Diabetes Atherosclerosis Intervention Study. Journal of the American Dietetic Association.

Cunningham, E. (2009). What Impact Does Plate Size Have on Food and Nutrition? Journal of the American Dietetic Association, 109(10), 1816. doi:10.1016/j.jada.2009.08.028

Cunningham, E. (2011). Where Can I Find Resources on the Local Food Movement? Journal of the American Dietetic Association, 111(7), 1094. doi:10.1016/j.jada.2011.05.022

Video available through:

https://www.youtube.com/watch?v=_qEFIpDoxg

6. Exercise Recommendations

¡Es hora de hacer Ejercicio!

¡El ejercicio es una parte importante de tu vida y es fundamental para combatir la diabetes! **¡La edad no importa!** El objetivo es que te ejercites durante media hora cinco días a la semana.

¿Qué hacer antes de empezar?

Primero debes hablar con tu doctor para saber cuál es la mejor rutina de actividad física. Si estas recibiendo medicamentos para la Diabetes, revisa tus niveles de azúcar antes de salir a hacer ejercicio. Si tu azúcar (glucosa) está por debajo de 100 mg/dL, consume algo como una fruta o snack antes de ejercitarte.

¿Cómo empezar?

Si no tienes la costumbre de realizar ejercicio, empieza por caminar 10 minutos durante el día y ve aumentado poco a poco. Usa un reloj para saber cuánto tiempo estas ejercitándote a diario. ¡No dejes pasar más de dos días sin salir a caminar!

¿Qué debo tener en cuenta?

- Utiliza zapatos adecuados. Recuerda que debes cuidar tus pies de cualquier lesión.
- Lleva siempre un pequeño refrigerio para elevar tu azúcar: pueden ser dulces pequeños, media taza de jugo o una cucharada de azúcar disuelta en agua.
- Detente si te sientes mareado, tienes visión borrosa, sientes falta de aliento o sientes que puedes desmayarte. Cuando esto ocurra consume un refrigerio.

¿Qué hacer después de terminar?

- Revisa tus pies para estar seguros de que no hay ninguna lesión
- Revisa tus niveles de azúcar

Contacta con tu médico:

- Si tienes problemas de visión
- Si tienes algún problema en tus pies
- Si tienes episodios de dolor de pecho
- Si quieres iniciar una rutina de ejercicios de mayor intensidad.

Para mayor información visita:

www.diabetes.org

References:

American Diabetes Association. Standards of medical care in diabetes -- 2014. *Diabetes Care*. 2014;37:S14-S80

Marwick TH, Hordern MD, Miller T, et al., on behalf of the American Heart Association Exercise, Cardiac Rehabilitation, and Prevention Committee of the Council on Clinical Cardiology; Council on Cardiovascular Disease in the Young; Council on Cardiovascular Nursing; Council on Nutrition, Physical Activity, and Metabolism; and the Interdisciplinary Council on Quality of Care and Outcomes Research. Exercise training for type 2 diabetes mellitus: impact on cardiovascular risk: a scientific statement from the American Heart Association. *Circulation*. 2009;119:3244-3262

Diabetes and exercise. Medline Plus. Retrieved October 10 2015 from: <https://www.nlm.nih.gov/medlineplus/ency/patientinstructions/000083.htm>

Mayo Clinic. Diabetes and exercise: When to monitor your blood sugar. Retrieved October 10 2015 from: <http://www.mayoclinic.org/diseases-conditions/diabetes/in-depth/diabetes-and-exercise/art-20045697?pg=1>

American Diabetes Association. Walking – A Great Place to Start! Retrieved October 10 2015 from: <http://www.diabetes.org/food-and-fitness/fitness/types-of-activity/walking-a-great-place-to-start.html>

Video available through:

https://www.youtube.com/watch?v=tn8yJD_F5s4

7. Reading Nutritional Labels

¿Alguna vez le has dado la vuelta a los alimentos que compras? ¡Anímate a hacerlo!
 Esto es lo que encontrarás [Nutritional Label]:

Nutrition Facts		
Serving Size: 1 bar (40 g)		
Servings Per container: 1		
Amount Per Serving		
Calories: 170 Calories from Fat 60		
% Daily Value*		
Total Fat	7 g	11 %
Saturated Fat	3 g	15 %
Trans Fat	0 g	
Cholesterol	0 mg	0 %
Sodium	160 mg	7 %
Total Carbohydrate	24g	8 %
Dietary Fiber	3g	12 %
Sugars	10g	
Protein	5g	
Vitamin A		2%
Vitamin C		2%
Calcium		20%
Iron		8%

Ahora miremos cada parte de la etiqueta:

El serving size es el tamaño de una porción del alimento que viene en la etiqueta.

Servings per container indica cuantas porciones vienen en un solo empaque del alimento.

¡Las Calorías!

Calories te anuncia la cantidad de calorías que contiene una porción de tu alimento. Puedes comparar entre varios productos para saber cuál te ofrece menos calorías. Un alimento se considera alto en calorías cuanto tiene más de 400.

¿Cómo se cuántas calorías debo consumir en un día?

Esto depende de varios factores como el peso, la edad, el género y la cantidad de actividad física que realices. La recomendación para personas con Diabetes es mantener un consumo de calorías de 1500 por día si hay sobrepeso.

Ahora regresemos a la etiqueta nutricional. Debajo de las calorías encontrarás información sobre el contenido de grasas, colesterol, sodio, carbohidratos y proteínas. ¡Vamos a mirar las grasas!

Lo mejor para tu diabetes es mantener un bajo consumo de grasas (fats en inglés), y consumir aquellas que son más saludables. Si te fijas en la etiqueta debajo de Total fat, aparecen Saturated fat (Grasas saturadas) y Trans fat (Grasas trans). Ambas son grasas perjudiciales. En algunas ocasiones aparecen en la etiqueta Monounsaturated y Polyunsaturated (monoinsaturadas y poliinsaturadas); estas son grasas mucho más saludables para tu organismo.

El colesterol es también un tipo de grasa, y por tanto es mejor consumirlo al mínimo posible.

La sal, llamada “sodium en inglés” también debes consumirla al mínimo posible. En realidad necesitas una cucharadita de sal al día distribuida en todas tus comidas para mantenerte saludable.

¡Los carbohidratos básicamente son azúcar! Por ello hay que buscar aquellos alimentos que los contengan en menor cantidad.

La fibra es un alimento sano para consumir, ayuda a tener una buena digestión y en algunos casos, permite tener un mejor control de la glucosa. Un consumo de 14 de gramos de fibra por cada 1000 calorías es recomendado.

Por último, las vitaminas A y C, el calcio y el hierro son alimentos muy necesarios para tu nutrición. ¡Trata de consumirlos cada vez que puedas! ¡Mucho mejor si vienen de alimentos naturales!

¿Esta información ha sido demasiado para ti? ¡Calma! Solo intenta ir poco a poco, empieza por analizar los alimentos más habituales que consumes y compara los ingredientes que contienen. Recuerda también comentar todas las inquietudes que tengas a tu equipo de salud.

Para más información te recomendamos las siguientes páginas web:

www.diabetes.org

www.fda.gov

www.usda.gov

References

U.S. Department of Agriculture, & U.S. Department of Health and Human Services. (2010). Dietary Guidelines for Americans 2010. Government Printing Office, 7, 95.


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Video available through:

<https://www.youtube.com/watch?v=KDDryUOGOP4>

B. Informed Consent



UNIVERSIDAD NACIONAL DE COLOMBIA
SEDE BOGOTÁ
FACULTAD DE ENFERMERÍA



PURDUE
UNIVERSITY

Fecha: _____

➤ En calidad de estudiante de la Facultad de Enfermería de la Universidad Nacional de Colombia y visitante en Purdue University, la (lo) estoy invitando a participar en este proyecto.

En el transcurso de las sesiones grupales llevará a cabo la aplicación de videos educativos de aproximadamente 3 minutos de duración, que serán administrados por el estudiante.

Su nombre y datos personales no aparecerán en ningún documento de este proyecto, estos serán identificados con un código. La información que usted brinde sólo será utilizada únicamente para fines académicos, no tendrá repercusión alguna, y una vez recolectada, se guardará durante un año, hasta que se considere que su utilización no vulnere la integridad física o moral de los participantes, luego será destruida.

Si en algún momento usted se siente incómodo (a) durante el diligenciamiento de los formatos, por favor comuníquelo y este será interrumpido de inmediato. Usted puede dejar de responder estos instrumentos en el momento que lo desee o lo considere necesario guardándose las razones de esta decisión. Su negativa a responder los instrumentos no le acarreará ninguna consecuencia negativa.

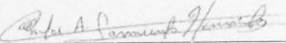
La participación en este proyecto no implica ningún riesgo para su salud. Sin embargo, si durante el diligenciamiento usted presenta alguna alteración emocional, se suspenderá de inmediato y se hará la recomendación a su médico tratante para su atención correspondiente. Su participación no tiene ningún costo económico.

En ningún momento se dará a conocer su nombre, ni datos personales. Es importante aclarar que este estudio cuenta con el apoyo académico de la Universidad Nacional de Colombia y Purdue University

Este proyecto es guiado por la docente Elizabeth O'Neil (Purdue University) y Elizabeth Vargas Rosero (Universidad Nacional de Colombia)

Agradecemos su atención y esperamos que usted acepte vincularse a este proceso.

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He leído y comprendido toda la hoja de información y he obtenido respuestas por parte del estudiante responsable a todas mis preguntas e inquietudes y he recibido suficiente información sobre el objetivo y propósito de este proyecto. Sé que mi participación es voluntaria y que puedo retirarme en el momento que lo desee.

Nombre: _____

Firma: _____ Fecha de Nacimiento: _____

Teléfono: _____

C. Appendix: Questionnaires for Patients Evaluation

C.1. Instrument for Video 1: ¿Qué es la diabetes? (Diabetes Concept)

Nombre: _____					
Lado 1					
1. ¿Qué es la diabetes?			3. ¿Cuáles son los problemas de la Diabetes?		
Una enfermedad relacionada con el aumento de azúcar en el organismo.			Se eleva el azúcar en sangre		
Una enfermedad relacionada con la disminución de azúcar en el organismo.			Puede provocar problemas graves como infartos, derrames cerebrales, falla renal, problemas de visión como ceguera, amputación de dedos o extremidades.		
Una enfermedad pasajera			Se baja el azúcar en sangre		
No sabe/No responde			No sabe/No responde.		
2. ¿Cuáles son los síntomas de la diabetes?			4. ¿Cómo se trata la Diabetes?		
En la Diabetes nunca hay síntomas			Usando medicamentos y asistiendo a las citas		
Mareo y nausea			Con un estilo de vida saludable, permaneciendo activo(a) todos los días mediante el ejercicio, manteniendo un consumo de alimentos sanos y con medicamentos para controlar la azúcar en la sangre.		
Necesidad de orinar más seguido de lo normal, sed intensa, visión borrosa, mayores deseos de comer.			Dejando de comer durante un tiempo, ya que es una enfermedad pasajera		
No sabe/No responde.			No sabe/No responde		
5. ¿Qué tanto le gustó el video?			6. ¿Volvería a ver este video?		
Me gustó			Sí		
No me gustó			No		
Otra respuesta: _____			Otra respuesta: _____		

C.2. Instrument for Video 2: *Cosas que Vigilar* (Important measurements)

Lado 2					
1. ¿Cuáles son los factores importantes que nos ayudan a saber cómo está la azúcar en sangre y tu nivel de salud?			3. ¿Por qué es importante la presión arterial?		
Glucosa diaria, A1C, Presión arterial, Colesterol.			Porque permite saber si estoy triste o ansiosa (o).		
Glucosa.			Porque permite saber mi nivel de energía durante el día.		
La insulina y el ejercicio			Porque permite saber cómo está el flujo de sangre en el organismo.		
No sabe/No responde			No sabe/No responde.		
2. ¿Cómo puedo medir mi glucosa en sangre?			4. ¿Cuáles son las grasas que hay en el cuerpo?		
Con el glucómetro.			Colesterol, triglicéridos, HDL y LDL		
Con la A1C (Hemoglobina glucosilada) y el glucómetro.			Colesterol y triglicéridos		
Asistiendo a una cita.			Almidón		
No sabe/No responde.			No sabe/No responde		
5. ¿Qué tanto le gustó el video?			6. ¿Volvería a ver este video?		
Me gustó			Sí		
No me gustó			No		
Otra respuesta: _____			Otra respuesta: _____		

C.3. Instrument for Video 3: *Es Hora de un Plato Saludable* (Plate Method)

Nombre: _____					
1. ¿Qué es el método del plato?			3. ¿Qué tantos alimentos con almidón debo consumir en una comida?		
Una estrategia para disminuir el costo de comprar alimentos			Aproximadamente la mitad de plato		
Una estrategia para consumir alimentos en forma más saludable			Un cuarto (1/4) de plato		
Una forma de consumir menos alimentos			Más de la mitad del plato		
No sabe/No responde			No sabe/No responde.		
2. ¿Qué tantos vegetales debo consumir en una comida?			4. ¿Qué tanta proteína debo consumir en una comida?		
Aproximadamente la mitad de plato			Aproximadamente la mitad de plato		
Menos de un cuarto (1/4) de plato			Un cuarto (1/4) de plato		
No es necesario consumir vegetales siempre			Más de la mitad del plato		
No sabe/No responde.			No sabe/No responde		
5. ¿Qué tanto le gustó el video?			6. ¿Volvería a ver este video?		
Me gustó			Sí		
No me gustó			No		
Otra respuesta: _____			Otra respuesta: _____		

C.4. Instrument for Video 4: *Cuidando la Marcha* (Foot Care)

Nombre: _____					
Lado 1					
1. ¿Cada cuanto debo revisar mis pies?			3. ¿Cuándo puedo andar descalzo?		
Una vez a la semana			Es mejor tratar de no andar descalzo		
Cada vez que sienta algo extraño			En la casa		
Todos los días			Cuando sienta la necesidad		
No sabe/No responde			No sabe/No responde.		
2. ¿Cómo debo limpiar mis pies?			4. ¿Cómo debo cortar mis uñas?		
Sumergiéndolos ó remojándolos en agua			Redondeándolas con el cortauñas		
Con agua tibia			En forma recta		
No hay que limpiarlos a diario			Dando un ángulo en cada esquina de la uña		
No sabe/No responde.			No sabe/No responde		
5. ¿Qué tanto le gustó el video?			6. ¿Volvería a ver este video?		
Me gustó			Sí		
No me gustó			No		
Otra respuesta: _____			Otra respuesta: _____		

C.5. Instrument for Video 5: ¡Es hora de Hacer Ejercicio! (Exercise recommendations)

Lado 2					
1. ¿Cuál es la rutina recomendada para el ejercicio?			3. ¿Si antes de hacer ejercicio mi glucosa esta en 70 mg/dL, que debo hacer?		
Más de una hora todos los días			No hacer ningún ejercicio		
Treinta minutos diarios cinco días a la semana			No hay ningún problema, puedo salir a hacer ejercicio normalmente		
Dos horas los fines de semana			Consumir un refrigerio, como una fruta o snack antes de hacer ejercicio		
No sabe/No responde			No sabe/No responde.		
2. ¿Qué debo hacer antes de empezar una rutina de ejercicios?			4. ¿Qué es importante hacer luego de realizar ejercicio?		
Aplicarme insulina			Revisar mis pies y los niveles de azúcar en sangre		
Comer en grandes cantidades ya que estoy haciendo ejercicio			Descansar para poder recuperar energía		
Si tengo medicamentos para la Diabetes, revisar como esta mi glucosa en sangre.			Comer inmediatamente		
No sabe/No responde.			No sabe/No responde		
5. ¿Qué tanto le gustó el video?			6. ¿Volvería a ver este video?		
Me gustó			Sí		
No me gustó			No		
Otra respuesta: _____			Otra respuesta: _____		

C.6. Instrument for Video 6: *La etiqueta Nutricional* (Nutritional Facts)

Lado 2					
1. ¿Cuál es la rutina recomendada para el ejercicio?			3. ¿Si antes de hacer ejercicio mi glucosa esta en 70 mg/dL, que debo hacer?		
Más de una hora todos los días			No hacer ningún ejercicio		
Treinta minutos diarios cinco días a la semana			No hay ningún problema, puedo salir a hacer ejercicio normalmente		
Dos horas los fines de semana			Consumir un refrigerio, como una fruta o snack antes de hacer ejercicio		
No sabe/No responde			No sabe/No responde.		
2. ¿Qué debo hacer antes de empezar una rutina de ejercicios?			4. ¿Qué es importante hacer luego de realizar ejercicio?		
Aplicarme insulina			Revisar mis pies y los niveles de azúcar en sangre		
Comer en grandes cantidades ya que estoy haciendo ejercicio			Descansar para poder recuperar energía		
Si tengo medicamentos para la Diabetes, revisar como esta mi glucosa en sangre.			Comer inmediatamente		
No sabe/No responde.			No sabe/No responde		
5. ¿Qué tanto le gustó el video?			6. ¿Volvería a ver este video?		
Me gustó			Sí		
No me gustó			No		
Otra respuesta: _____			Otra respuesta: _____		

D. Appendix: Webpages found with diabetes prevention materials

URL	Language	Audiovisual Resources	Describing disease	Nutritional aspects	Exercise aspects	Glucose Monitoring	Acute complications	Chronic Complications	Psychosocial issues	Behavior change	Facebook, YouTube, Twitter,
1 http://ndep.nih.gov/resources/index.aspx?SearchText=&ToolType=17&PageSize=10&CurrentPage=0	English	Video	No	Yes	Yes	No	No	No	No	Yes	Yes
2 http://ndep.nih.gov/resources/ResourceDetail.aspx?ResId=346	English	Video	No	Yes	Yes	No	No	No	Yes	Yes	Yes
3 http://ndep.nih.gov/resources/ResourceDetail.aspx?ResId=341	English	Video	No	No	Yes	No	No	No	Yes	Yes	Yes
4 https://www.youtube.com/watch?v=4_YOhBMZG3Q	English	Video	No	No	Yes	No	No	No	No	Yes	Yes
5 http://ndep.nih.gov/media/di-r-huerta-psa.mp3	Spanish	Audio	No	No	No	No	No	No	No	Yes	Yes
6 http://ndep.nih.gov/resources/ResourceDetail.aspx?ResId=342	English	Video	No	No	No	No	No	No	No	Yes	Yes
7 http://ndep.nih.gov/resources/recursos.aspx?SearchText=&ToolType=&Language=es&PageSize=10&CurrentPage=2	Bilingual	Text and Image	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No
8 http://ndep.nih.gov/resources/ResourceDetail.aspx?ResId=343	English	Video	No	No	No	No	No	No	No	Yes	Yes
9 https://www.youtube.com/watch?v=j0hekp7-fOs	English	Video	No	Yes	Yes	No	No	No	No	Yes	Yes
10 http://ndep.nih.gov/resources/ResourceDetail.aspx?ResId=379	English	Video	No	No	No	No	No	No	Yes	No	Yes
11 https://www.youtube.com/watch?v=LYGNf3SSWVE	English	Video	No	Yes	No	No	No	No	Yes	Yes	Yes
12 http://ndep.nih.gov/resources/ResourceDetail.aspx?ResId=375	English	Video	No	Yes	No	No	No	No	Yes	Yes	Yes

13	https://www.youtube.com/watch?v=G7iIQEzIHy8	English	Video	No	No	No	No	No	No	Yes	Yes	Yes
14	http://ndep.nih.gov/resources/ResourceDetail.aspx?ResId=376	English	Video	No	No	No	No	No	No	Yes	Yes	Yes
15	http://www.choosemyplate.gov/	Bilingual	Text and Image	No	Yes	No	No	No	No	No	No	Yes
16	http://www.cdc.gov/diabetes/ndep/road-to-health.htm	Bilingual	No	No	No	No	No	No	No	No	No	No
17	http://therealbears.org/sodafacts101.pdf	English	Text and image	No	Yes	No	No	No	Yes	No	No	Yes
18	https://www.youtube.com/watch?v=rzm0i7iLu2s	Bilingual	Video	No	Yes	No	No	No	Yes	No	No	Yes
19	http://kidshealth.org/kid/en-espanol/enfermadades/type1_esp.html	Bilingual	Video	Yes	No	No	No	No	No	No	No	No
20	http://www.diabetes.org/es/vivir-con-diabetes/tratamiento-y-cuidado/el-control-de-la-glucosa-en-la-sangre/cmo-medir-la-glucosa-en-la.html	Bilingual	Text and image	No	Yes	No	Yes	No	Yes	No	No	No
21	https://www.youtube.com/watch?t=58&v=0IHQuWQUs	Bilingual	Video	No	Yes	No	No	No	No	No	Yes	Yes
22	https://donations.diabetes.org/site/SPageServer/?pageName=LWT2D_Spanish&loc=avocado-dorg&s_src=d.org&s_subsrc=avocado	Bilingual	Text and image	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
23	http://ndep.nih.gov/media/NDEP48_Cuide_sus_pies_2c_508.pdf	Bilingual	Text and image	No	No	No	No	No	Yes	No	No	No
24	http://www.foothealthfacts.org/Content.aspx?id=1246	English	Text and image	No	No	No	No	No	Yes	No	No	No
25	http://www.cdc.gov/diabetes/spanish/pdfs/controle.pdf	Bilingual	Text and image	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=42	Bilingual	Text and image	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No
27	https://www.diabeteseducator.org/patient-resources/diabetes-goal-tracker-app	English	Text and image	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
28	http://www.eatright.org/resources/for-men	English	Video	No	Yes	Yes	No	No	No	No	No	No

29	http://public.health.oregon.gov/DiseasesConditions/ChronicDisease/Diabetes/Pages/Mealsmadeeasy.aspx	Bilingual	Text and image	No	Yes	No	No	No	No	No	Yes	No
30	http://tracker.diabetes.org/es/recipe/browse/3/	Bilingual	Text and image	No	Yes	No	No	No	No	No	No	No
31	http://www.ndep.nih.gov/publications/PublicationDetail.aspx?PubId=73&lang=Spanish	Bilingual	Text and image	No	Yes	Yes	No	No	No	No	Yes	No
32	http://professional.diabetes.org/ResourcesForProfessionals.aspx?cid=77080	Bilingual	Text and image	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
33	http://www.cdc.gov/healthyweight/spanish/healthyeating/rethinkyourdrink.html	Bilingual	Text and image	No	Yes	No	No	No	No	No	No	No
34	http://www.healthystudy.org/materialsmatrix.htm	English	Text and image	No	Yes	Yes	No	No	Yes	Yes	Yes	No
35	http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=158&lang=Spanish	Bilingual	Text and image	No	Yes	Yes	No	No	No	No	Yes	No
36	https://catalog.niddk.nih.gov/detail.cfm?ID=411	Bilingual	Text and image	No	Yes	No	No	No	No	No	Yes	No
37	http://healthfinder.gov/espanol/prevention/ViewTopicFull.aspx?topicId=55&catId=	Bilingual	Text and image	Yes	Yes	Yes	No	No	Yes	No	Yes	No
38	http://www.diabetes.org/es/alimentos-y-actividad-fisica/condicion-fisica/tipos-de-ejercicio/caminar.html	Bilingual	Audio	No	No	Yes	No	No	No	No	Yes	No
39	http://www.mayoclinic.org/diseases-conditions/diabetes/in-depth/diabetes-and-exercise/art-20045697?pg=1	English	Text and image	No	No	Yes	Yes	Yes	No	No	Yes	No
40	https://www.nlm.nih.gov/medlineplus/ency/patientinstructions/000083.htm	Bilingual	Text and image	No	No	Yes	Yes	Yes	No	No	Yes	No
41	http://ndep.nih.gov/media/learn-food-labels-508.pdf	Bilingual	Text and image	No	Yes	No	No	No	No	No	No	No

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