Improving Satisfaction of Non-English-Speaking Dental Students Using the Electronic Dental Record

June 2023

Leandro Feliz-Matos, DDS, MEd

PhD in Health Sciences

Dr. Pallavi Patel College of Health Care Science

Nova Southeastern University

NSU Florida
NOVA SOUTHEASTERN UNIVERSITY

DR. PALLAVI PATEL COLLEGE OF HEALTH CARE SCIENCES
3200 South University Drive
Fort Lauderdale, Florida 33328-2018
WEB: *nova.edu/chcs*

Signature Page

We hereby certify that this dissertation proposal, submitted by **Leandro E. Feliz**, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the dissertation proposal requirement for the degree of **PhD in Health Sciences.**

Peter Holub, PhD

_____ _____

Name and credentials Date

Chairperson of Dissertation Committee

Franklyn García-Godoy, PhD

_____ _____

Name and credentials Date

Dissertation Committee Member

Debra Dixon, DHSc

_____ _____

Name and credentials Date

Dissertation Committce Member

Approved:

Moya Alfonso, PhD

_____ _____

Program Director Date

Akiva Turner, PhD

_____ _____

Chair of the Department Date

Stanley H. Wilson, PT, EdD, CEAS, FASAHP

_____ _____

Acting Dean of the College and Associate Professor Date

Abstract

Electronic dental record (EDR) with dental diagnostic terminology (DDT) is an innovation in health information technology as it contributes to the oral health system of the Dominican Republic and other Spanish-speaking countries. The implementation and use of electronic health record and EDR in developing countries is limited, and there is lack of standardized Spanish terminology reflected in current EDRs. The evaluation of student satisfaction relevant to the use of EDR/DDT provided valuable information regarding the design and implementation of EDR/DDT at Universidad Iberoamericana (UNIBE) in the Dominican Republic as well as other Spanish-speaking dental colleges and public and private practices. The development of EHR and EDR, especially in developing countries, is a process full of challenges and barriers. This investigator used a quantitative approach within a non-experimental correlational design and a cross sectional survey with a non-probabilistic sample. Research questions determined which is the overall satisfaction of third- and fourth-year dental students with the use of UNIBE's EDR/DDT as well as function expectancy, effort expectancy, attitude, social influence, facilitating conditions and training, autoeficacy, anxiety, and intention to use. The satisfaction survey consisted of a modified version of a validated EDR study translated into Spanish. A log file analysis of student interaction with the EDR system was also be completed. Descriptive statistics, cross tabulation, and Pearson correlation coefficient were presented in the results.

Table of Contents

Page

Signature Page ii
Abstract iv
Table of Contents v
List of Tables viii
List of Figures ix
Chapter 1: Introduction 1
- Introduction to the Chapter 1
- Background to the Problem 2
- Statement of the Problem 4
- Relevance 6
- Elements 9
  - Hypothesis 9
  - Research Question 9
  - Theories 10
- Definitions of Terms 12
- Description of Variables 13
- Rationale 14
- Assumptions 14
- Summary of the Chapter 14

Chapter 2: Review of the Literature 16
- Introduction to the Chapter 16
- Historical Overview 16
- Relevant Theory 22
  - Relevant Concepts 22
  - Usability and Advantages of EHR and EDR 22
  - Research Opportunities with EHR and EDR 24
  - Education and Development 25
- Relevant Contexts 26
  - Innovation Theory 26
  - The Dominican Health System 27
  - The Situation of EHR and EDR in Latin America and the Caribbean 28
  - Satisfaction Survey Implementation 31
  - Adoption 31
- Summary of the Literature 32

Chapter 3: Methodology 33
- Introduction to the Chapter 33
- Research Design and Methodology 33
- Study Design 35
  - Hypothesis 35
  - Research Question 35
  - Variables 36
- Rationale 37
- Threats 37
- Approach 38

Resources 38
Strengths and Weakness of Design 38
Specific Procedures 39
Subjects 39
Power 40
Confidence Interval 40
Sample Size 40
Inclusion Criteria 40
Exclusion Criteria 40
Characteristics 40
Recruiting Procedures 41
Resource Requirement 41
Reliability and Validity 41
Timeline 43
Ethical Considerations and Review 43
Funding 44
Study Setting 44
Instruments and Measures 44
Data Collection Procedures 45
Data Analysis 45
Format for Presenting Results 45
Anticipated Limitations and Delimitations 45
Summary of the Chapter 45
Chapter 4: Results 47
Introduction to the Chapter 47
Hypothesis and Research Questions 47
Hypothesis 48
Research Question 1 48
Research Question 2 49
Research Question 3 50
Research Question 4 51
Research Question 5 52
Research Question 6 53
Research Question 7 54
Research Question 8 55
Research Question 9 56
Correlation Matrix 57
Research Questions 10 and 11 58
Chapter 5: Discussion 62
Introduction to the Chapter 62
Summary of the Findings 62
Integration of the Findings with Previous Literature 63
Implications of the Findings 67
Implications for Education 67
Implications for Practice 67
Implications for Research 68

Implications for Public Policy 68
Limitations and Recommendations 68

References 70

Appendices 79
Appendix A. UTAUT Instrument 79
Appendix B. UTAUT Instrument in Spanish 81
Appendix C. Log File Measurables 82
Appendix D. Syllabus/GICO/EDR 83
Appendix E. Syllabus program/GICO/EDR 96

List of Tables

Page

Table 1. Dependent and Independent Variable 36

Table 2. Descriptive Statistics and Reliability of UTAUT and its Dimensions 46

Table 3. Pearson's Correlation Matrix of the UTAUT with all dimensions 56

List of Figures

Page

Figure 1. Box Plot Representing the Mean of Item Responses for the UTAT Scale 47
Figure 2. Box Plot Representing the Mean of Item Responses for the Function Expectancy Subscale.....48
Figure 3. Box Plot Representing the Mean of Item Responses for the Effort Expectancy Subscale.....49
Figure 4. Box Plot Representing the Mean of Item Responses for the Attitude Subscale 50
Figure 5. Box Plot Representing the Mean of Item Responses for the Social Influence Subscale 51
Figure 6. Box Plot Representing the Mean of Item Responses for the Facilitating Conditions Subscale.....52
Figure 7. Box Plot Representing the Mean of Item Responses for the Self-Efficacy Subscale 53
Figure 8. Box Plot Representing the Mean of Item Responses for the Anxiety Subscale.....54
Figure 9. Box Plot Representing the Mean of Item Responses for the Intention to Use Subscale 55
Figure 10. Frequencies of Patients' Record Entries by Time of Day 57
Figure 11. Frequencies of Patients' Record Entries by Month.....58
Figure 12. Frequencies of Logins or Entries by Months/Time of the Day 58
Figure 13. Frequencies of System Activities by Month 59

Chapter 1: Introduction

Introduction to the Chapter

The dental diagnostic system (DDS), formerly known as Ez-Codes, was developed by Dr. Elsbeth Kalenderian, a professor from the School of Dental Medicine at Harvard University, located in Boston, MA. The terminology was successfully implemented in the United States (US) and gained recognition from other countries and institutions, such as the American Dental Association (ADA). The DDS includes more than 4,000 terms in English, identified by a numeric code (Tokede et al., 2013). Universidad Iberoamericana (UNIBE) obtained from Harvard University the rights to translate the DDS into Spanish and adopt it in its electronic dental record (EDR) as the dental diagnostic terminology (DDT). UNIBE's EDR/DDT was designed and developed by a team of experts and implemented in the dental clinics of the dental school.

Electronic health records (EHR) as well as EDR facilitate the development of prevention plans, education programs, patient-centered care and evidence-based decisions (Asgari, 2018). According to Shahmoradi et al. (2017), "EHR accelerate access to information and have the potential to upgrade clinical workflow; they also have the capacity to support other associated activities by means of various tools such as decision support system (DSS) and intelligent systems" (p. 1).

The EDR/DDT was implemented in UNIBE, which was founded in 1982 and is located in Santo Domingo, Dominican Republic, as an innovation for the national public health system because no EHR in the area of dentistry has been implemented so far. The system includes at its first stage a module with tools to identify diagnoses and treatments that were designed and developed according to the best practices in information technology (IT; Feliz et al., 2018). The

DDT was included as part of the system innovation based on the need to standardize the dental diagnostic terminology used in the Dominican Republic and other Spanish-speaking countries and make it official in the oral health systems.

A study of satisfaction of end users of the EDR/DDT improved the understanding of clinicians, users, and information technology specialists regarding its adoption as well as adjustments needed in order to improve the system. Data were collected and assessed to determine relevant information with the results of the evaluation of different categories of the EDR/DDT, such as function, alerts and prompts, ease of use and flexibility, service and support, cost, interoperability, and security (Porter, 2013; Thu et al., 2017). Some dental clinics from universities have evidence that access and quality of care is facilitated by the use EDR (Filker et al., 2013). A cross sectional study was implemented to survey dental students for satisfaction as the end users of the EDR/DDT. A validated survey in English translated into Spanish was used in order to evaluate the aforementioned categories of the EDR/DDT and obtain evidence regarding satisfaction or dissatisfaction.

Background to the Problem

Dental schools around the world, especially those in developing countries, are transitioning to electronic dental records (EDR) to meet the challenges of dental education and patient care. Participation of dental students in this transition is vital to its success and should be included as part of their study program (Rahimi et al., 2018).

EDR is an innovation for dentistry in the Dominican Republic because there is no current official standardized electronic records system at the national level (Servicio Nacional de Salud, 2021; Feliz et al., 2018). Development of EDR/DDT at UNIBE will require evaluation of user satisfaction, a key component of EDR development and performance (Reed et al., 2015; Sidek &

Martins, 2017). It follows that an evaluation of student satisfaction can provide additional information that may be used to improve future developments of the EDR software, which will expand its application to different areas, including operative dentistry, periodontics, endodontics and surgery in the oral health system. Also, the application can expand to dental schools of the Dominican Republic and other Spanish-speaking countries (Cederberg & Valenza, 2012). Dental student satisfaction in the implementation and use of EDR/DDT can be measured in terms of ease of use and perceived usefulness, by using satisfaction and perception surveys (Maskey, 2011; Thu et al., 2018).

According to Shahmoradi et al. (2017), barriers in the implementation of EDRs include a lack of national information standards to develop and implement EDRs, the limitation of health professionals' knowledge in accessing information technology, different levels of technology adoption, and language. These elements must be considered when evaluating perception and satisfaction of end users. UNIBE conducted its own EDR/DDT design, development, and implementation plan based on previous experiences after evaluating dental students' satisfaction and consulting publications and reports of other dental schools from developed countries when implementing EDR. UNIBE also utilized methodologies and best practices of IT and information systems (IS) to develop the software. This investigator evaluated for the first time satisfaction surveys of UNIBE's dental students after implementation of the EDR/DDT.

The academic program of the dental school of UNIBE includes digital education. The clinical diagnostic course is offered as pre-clinical training during the sixth semester at the end of the second year of a four-year program. In the course, students receive the proper training to diagnose and develop a treatment plan. They start using the EDR/DDT through a virtual simulator (GICO-LAB) for 16 hours, including clinical history, diagnostic, and general dentistry

treatment topics. The objective is to live the most real experience before being exposed to a real life patient and allowing the students to become familiar with and learn the use of the software (UNIBE, 2021a). Third-year students start using the system with patients and based on the previous training received for the use with EDR/DDT in Clinic 1, which is the first clinic out of a total of five semesters-long clinics that third- and fourth-year students are required to attend to complete the dentistry program.

Technical difficulties during development and implementation of EDR/DDT, adjustments to specific clinical protocols, and the need for student training in the use of EDR/DDT can impact the quality of performance and satisfaction (Mostafa et al., 2015; Rahimi et al., 2018; Rosdahl et al., 2018). Financial limitations, infrastructure requirements, and lack of national information standards are just some of the additional challenges to consider in the development and implementation of EDR/DDT (Shahmoradi et al., 2017).

Statement of the Problem

According to Thu et al. (2017) regarding the evolution from paper to electronic media, there is still concern with patient confidentiality and security of patients' health information. The use of EHRs in dentistry has the benefit of improving data privacy as well as new challenges related to this matter. Faculty and students in dental clinics may face new issues that are not present on the paper-based health record, such as privacy, confidentiality and security due to the facility of duplication, retrieval, manipulation, transmission, and archiving of the health information of the EHRs (Thu et al., 2017). In the setting of EDR, other problems have been reported, such as the loss of face-to-face communication with patients due to the attention that EDR needs from users when completing the tasks in front of the computer or the mobile device (Sidek & Martins, 2017). Patient safety and quality of care may also be compromised if partial

information is collected on the system, such as the clinical history or demographics, which could be related to usability problems and technical difficulties that may impede users from accomplishing routine tasks, especially when transitioning from paper-based records (Sidek & Martins, 2017).

Lack of training in the use of EDR and EHR for dental students within their years of their didactic coursework as well as language and communication barriers can become handicaps when implementing the systems. The interaction with technology early in the learning process will strength their competencies related to diagnostic and treatment, thus promoting high-value patient-centered care (Sulmasy et al., 2017). A low level of adoption and use of EDR systems by health professionals will influence the success of systems implementation; in some cases, an accelerated integration combined with user resistance and lack of support may result in implementation failure (Sidek & Martins, 2017).

According to the low levels of EDR and EHR implementation in the Dominican Republic and in the rest of the Latin American countries, user input (in this case satisfaction or dissatisfaction of dental students) is essential to achieve improvements in the implementation (Mostafa et al., 2015; Organización Panamericana de la Salud, 2016).

The assessment of the students regarding EDR/DDT training include a list of items of diagnosis and image interpretation, time management, and domain of each one of the components of the modules; the rubrics of the clinics to evaluate students are guided by the learning model of competencies (Zheng et al., 2020). Students start using the EDR/DDT formally with patients in the diagnostic department of Clinic 1 and continue its use until Clinic 5. They receive constant academic and clinical support from faculty as well as technical and special support from the information technology and research center team.

The goal of the dissertation study was to contribute to the overall body of knowledge with the value that student input will provide in the development and implementation of the EDR/DDT. The data presented information that was used to identify reasons for satisfaction or dissatisfaction, make recommendations that may be used to improve the development and implementation of future phases of the EDR/DDT, and serve as reference to other dental schools and the public and private oral health system of the Dominican Republic and other Spanish-speaking countries.

Relevance

There is a high level of ethical and legal responsibilities related to patient care. Multiple benefits of EDR include improvement of prevention programs models, monitoring of treatment success and failure, and inter-consultation between medicine and dentistry. Electronic data collected with EDR allows identification of new diagnoses and disease correlation using predictive modelling in order to take clinical decisions based on evidence and observe changes in disease progression (Wanyonyi et al., 2019). EDR systems also contribute to the reduction of the incidence of issues, such as duplication of effort, lost records, drug administration errors, mistaken identity, errors in clinical decisions and inefficient billing. Creation of health policies and communication improvement are also reported benefits (Shamoradi et al., 2017; Sidek & Martins, 2017).

UNIBE has been developing and implementing the EDR/DDT in the dental school since 2019; the system is unique in the Dominican Republic and other Spanish-speaking countries. The diagnostic and treatment planning modules of the EDR/DDT were developed in the first stage and are already in use. UNIBE has plans to expand the implementation of EDR/DDT to other dental clinics and dental schools in future phases. User satisfaction with EDR/DDT is an

important part of development and implementation. Dental students are users of EDR and the satisfaction and usability of EDR is crucial to quality of care, and their satisfaction and feedback are of value to its development and successful implementation.

According to Thu et al. (2018), EDRs have been developed, implemented, and used by dentists and staff in developed countries since their usefulness and improvement in quality of health care have been demonstrated. Data storage as a function can be used to evaluate caries risk assessment and demographic information of the patients. EDR has comparative analysis of groups or individuals to ensure quality. Quality indicators may be developed based on reports of missing diagnostic images, alerts of patients with unfinished treatments, and missing control appointments. The system is useful to collect data from patient surveys (Mostafa et al., 2015). After a qualitative study conducted in Latin America that included 21 countries, it was concluded that implementation of EHR and EDR in developing countries is limited and certain recommendations have been given for these countries, such as establishing collaboration with universities, establishing e-health infrastructures, developing international collaboration with stakeholders related to eHealth agenda, and following the recommendations of the World Health Organization (WHO; Organización Panamericana de la Salud [PAOH], 2016; Parks et al., 2019; Stok Capella et al., 2019).

The education contribution of the dissertation study was related to the increased understanding of student satisfaction and the value that student input presents in the development and implementation of the EDR/DDT.

The contribution of user satisfaction surveys also has influenced future dental practice, specifically how the use of EDR/DDT is incorporated into the clinical practice of future dentists who were trained in the dental schools and satisfied with the use of these systems. EHR and EDR

include administrative modules for the management of appointments, payments, and storage, and satisfaction with all these elements have a positive impact on health personnel attitude, thus benefiting workflow and patient management (Cederberg & Valenza, 2012).

The research contribution of the dissertation study was expected from data that was used to evaluate dental student satisfaction in order to contribute to the body of knowledge. Evidence for the implementation of future studies is also a research contribution (Rosdahl, 2018). A survey of use and satisfaction implemented among orthopedic pediatricians was used to report the levels of satisfaction of an EHR. Data gathered from end users was used to find a significant difference in five indicators of satisfaction, such as efficiency of practice workflow, information services support, usefulness of template, speed of system and logon event, and language. The findings were used to produce a user and vendor map to guide improvements of the EHR functionality (Copley et al., 2019).

According to Thu et al. (2017) regarding the satisfaction of paper based dental record, dental professionals were satisfied with only three aspects of paper-based dental records: familiarity, flexibility, and portability. It is recommended that developers consider improving the flexibility, portability, familiarity, accuracy, integration, and accessibility of EDR in order to facilitate its adoption. Satisfaction with EDR is influenced by the availability and access to computers on each dental chair, promoting a positive attitude toward its implementation. Students involved in EDR implementations have found practical advantages and showed high level of satisfaction when moving from paper to computer-based systems (Mostafa et al., 2015).

The investigator expected results that would be valuable to public and private dental health services and dental schools that wish to implement EDR with standardized terminology of

diagnostics and treatments in particular to guide the procedures relevant to practice in the Dominican Republic and other Spanish-speaking countries.

Above all, it is hoped that the immediate, practical applications of the dissertation study would be of reference for dental schools and the oral health systems of the Dominican Republic and other Spanish-speaking countries by providing evidence regarding satisfaction of dental students and to support decisions for changing from paper-based record to EDR and its implementation (Thu et al., 2018).

Elements

Hypothesis

The levels of student satisfaction with EDR/DDT is dependent upon function expectancy, effort expectancy, attitude, social influence, facilitating conditions and training, self-efficacy, anxiety, and intention to use.

Research Questions

1. What is the overall satisfaction of UNIBE's third- and fourth-year dental students with the EDR/DDT?
2. What is the level of satisfaction of UNIBE's third- and fourth-year dental students with the function expectancy of the EDR/DDT?
3. What is the level of satisfaction of UNIBE's third- and fourth-year dental students with the effort expectancy of the EDR/DDT?
4. What is the level of satisfaction of UNIBE's third- and fourth-year dental students related to the attitude toward the EDR/DDT use?
5. What is the level of satisfaction of UNIBE's third- and fourth-year dental students related to social influence of the EDR/DDT?

6. What is the level of satisfaction of UNIBE's third- and fourth-year dental students with the facilitating conditions and training of the EDR/DDT?
7. What is the level of satisfaction of UNIBE's third- and fourth-year dental students with the self-efficacy of the EDR/DDT?
8. What is the level of satisfaction of UNIBE's third- and fourth-year dental students with the anxiety in the presence of the EDR/DDT?
9. What is the level of satisfaction of UNIBE's third- and fourth-year dental students with the intention to use the EDR/DDT?
10. What is the contribution of the raw audit data with the satisfaction of the EDR/DDT?
11. What is the contribution of generate session with the satisfaction of the EDR/DDT?

Theories

Recently, the diffusion of innovation theory has been used with success to study the adoption of individuals to new health care technology, such as telehealth programs, Internet health services, and computerized nursing care plan. The theory has been used also as the theoretical framework to examine, evaluate, and explain the impact of factors, in particular the characteristics involved in innovations and innovation decision-making processes (Zhang et al., 2015).

According to Weigel (2014), the diffusion of innovation theory includes ideas, practices, and materials perceived by learners and new users. The term diffusion refers to how the theory is communicated among the members of a social system (Zhang et al., 2015). Also, the theory can be used to explain technology diffusion. Adoption of technology is a decision to fully use innovation, the process is delivered in different stages and also with few ways of decision taking to fully embrace an innovation (Weigel, 2014; Zhang et al., 2015)

Innovation-decision process includes obtaining initial knowledge and the confirmation of the technology adopted. There are five characteristics of innovation regarding adoption decision which are complexity, observability, trialability, relative advantage, and compatibility (Zhang et al., 2015). Also, individuals have been characterized into the social systems; the classification has been made in five groups based on attitudes toward innovation. The classification based on levels of adoption is composed by innovators, early adopters, earlier majority, later majority, and laggards (Wiegel, 2014).

According to Weigel (2014), innovators represent 2.5% of the individuals into the social ecosystem and are the first target group to the research question. They also have the ability to understand and apply complex technical concepts and knowledge, which are basic to bring the innovation from outside the social ecosystem

Early adopters are more integrated into the social ecosystem than innovators, and they tend to be informed and connected to the new technology and frequently are individuals who are economically successful. Innovators and early adopters represent 16% of the population in the social ecosystem. The next two groups (early and later majority adopters) represent 68% of the population. The last group represented are the laggards, who are the stronger resisters to adoption and innovation (Weigel, 2014). Based in these classifications it is important to address that a social system is a set of interrelated units that solve a problem to accomplish a common goal. Third- and fourth-year dental students of UNIBE are classified as innovators and early adopters.

Research for the dissertation was used to question the satisfaction of third- and fourth-year dental students with UNIBE's EDR/DDT and to explore their reasons for satisfaction or dissatisfaction. The diffusion of innovation theory provided the framework for development of the survey and analysis of results.

Definition of Terms

1. Attitude. The person's behavior is influenced by his or her feeling or way of thinking.
2. Consumer health informatics (CHI). The study of patient information oriented to health literacy and consumer knowledge.
3. Dental diagnostic terminology (DDT). The codification of dental diagnoses and treatment plans in Spanish.
4. Dental diagnostic system (DDS). The codification of dental diagnoses and treatment plans in English.
5. Decision support system (DSS). A system designed to support the process of decision-making.
6. Electronic dental record (EDR). A digital collection of dental patient records.
7. Electronic health record (EHR). A digital collection of patients' health records.
8. Function expectancy (FE). Satisfaction with the usability of the system, work flow, productivity, and academic progress.
9. Effort expectancy (EE). Ease of interaction with the system, become an expert easily.
10. Facilitating conditions and training (FCT). The basic resources are available to use the system, The user has the needed knowledge to use the system, the system is compatible with other systems.
11. Intention to use (IU). The intention to use the system during the time.
12. Generate session (GS). When the start and end point of each session are identified and matched with the login and logout actions.
13. Gestión Integral de Clínicas Odontológicas (GICO). The electronic dental record system developed by UNIBE.

14. Information technology (IT). The use of computers and telecommunication systems to secure, exchange, and process any electronic data.
15. Information systems (IS). A sociotechnical and integrated system for providing information and develop digital products.
16. Inspect time from last action (ITLA). Where the time gap to identify a coherent session is controlled and limited.
17. Read raw audit data (RRAD). Where raw data or log in data are imported and secondary variables from preliminary computations are completed.
18. Self-efficacy. The individual belief in his or her capacity and the behavior needed to produce specific actions.
19. Social influence (SI). Influencers, advisors, and important people interacting with the user promote the use of the system.

Description of Variables

Satisfaction of end users of the EDR/DDT was evaluated based on function expectancy, effort expectancy, attitude, social influence, facilitating conditions and training, auto-efficacy, anxiety, and intention to use, and overall satisfaction. Log files were routinely revised for operational purposes to help developers of websites, systems, and apps understand the behaviors of users to further improve these programs; log file analysis in the context of EDR might help to track the number and certain bahavior of people using the system (Huerta et al., 2019). The dependent and independent variables were classified based on the Unified Theory of Acceptance and Use of Technology (UTAUT) survey and in the measurables in the log file analysis.

The measurables that were evaluated in the log file analysis consisted of the following:

1. Read raw audit data in which raw data were imported and secondary variables from preliminary computations were completed.
2. Generate session in which the start and end point of each session were identified and measured by time and matched with the login and logout actions (Di Tosto et al., 2020).

Rationale

One of the principal reasons to conduct the study was based on the need to contribute to the overall body of knowledge regarding the value of student input in the development and implementation of EDR/DDT in academic and public and private practices in the Dominican Republic and other Spanish-speaking countries.

Assumptions

1. A student satisfaction survey of Spanish speaking third- and fourth-year students at UNIBE will reflect specific aspects of EDR related to satisfaction as well as identify issues related to student dissatisfaction with EDR.
2. The sample will represent the population of dental students as a whole.
3. The log data collected will reflect student usage of EDR.
4. The log data collected from the log file analysis will reflect student satisfaction or dissatisfaction with the EDR.

Summary of the Chapter

EDR/DDT is an innovation in health information technology as it contributes to the oral health system of the Dominican Republic and other Spanish-speaking countries. The implementation and use of EHR and EDR in developing countries is limited, and there is lack of standardized Spanish terminology reflected in current EDR/DDT. The evaluation of student

satisfaction relevant to the use of EDR/DDT may provide valuable information regarding the design and implementation of EDR/DDT at UNIBE and other Spanish-speaking dental colleges and public and private practices. The diffusion of innovation theory was applied toward the implementation of the student satisfaction survey and its analysis and served as reference of discussion of the findings and drive conclusions. A cross-sectional survey was implemented to evaluate aspects, such as function expectancy, effort expectancy, attitude, social influence, facilitating conditions and training, autoeficacy, anxiety, and intention to use, and overall satisfaction. Additional elements of the EDR/DDT/GICO system were evaluated. In order to complete the analysis and obtain additional information of how many time dental students spent with patients, the amount of times they logon during the semester, and in general how they interact with the EDR. A log file analysys will be completed using the data base from the semester September-December 2022/7 weeks (Huerta et al., 2019).