Opinion

Functional and Non-Functional Specifications of a Telehealth Software Application for Diabetes Mellitus

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Diabetes Mellitus (DM) and Obesity are metabolic diseases with serious health impacts and they both comprise cardio-vascular (CVD) risk factors. DM is also a risk factor for developing small and large vessel complications (e.g., nephropathy, retinopathy, heart disease, stroke, peripheral arterial disease).

The proposed software application belongs to the Electronic Health Management Information Systems (eHMIS) category. These systems are designed to fulfill the need of automated national health information management system. They helps to accurately and timely collect, aggregate, store, analyze and evaluate health related data from health facility to federal level. Its main users are public policy makers, health officers, researchers, planning departments of health offices, data entry clerks and many others ranging from health facility to federal management levels. These systems can provide useful information for decision making to health professionals [1-3].

Functional Requirements of the Cometech eHMIS

Based on the above, the following list presents the required functionalities for the cometech project:

- Creation of registration with the personal data of the medical and nursing staff that will be involved in the pilot implementation of the project in the four health units.

- Management of medical staff users

- Management of medical records of patients.

- Receiving Medical Data from Recording Devices (Glucose, Arterial Pressure, Cardiogram, Oximetry, Spirometry, Thermometry, Stethoscopy, Otolaryngology, Pelvic Painting, Electrolyte Dilochronate Measurement, from Camera, etc. Regarding the health record, the following data must be recorded) [4,5].

- Social - demographic data.

- Anthropomorphic data.

- Hematological Examinations.

- Biochemical tests.

- General urine test.

- Glycosylated Hemoglobin.

- Display a total number of active participants.

- Monitoring goals for all participants during the project and its completion. Objectives to be followed: Glycosylated Hemoglobin ≤

7%, Decrease in the number of hypoglycemia per month, Compliance with the proposed number of telemedicine measurements (AP, Blood Glucose, Oximetry, Spirometry, etc.) Score of dietary questionnaires, Take glucose tapes per month, and Evaluation of physical activity.

- Display automatic notification on receiving/sending and managing medical parameters software whenever a goal is not achieved.

- Visit and appointment management.

- Easy to use Graphic Environment in Greek and English.

- Ability to store data locally and send it to another time it is within network coverage.

- Ability to view locally stored exams in the form of a history.

- Get answers from health professionals and view locally.

- Possibility of synchronization with the Medical Electronic Integrated Diabetes Folder.

- Connect the software with the recording devices of at least Glucose, Arterial Pressure, ECG, Oximeter, Spirometer, Thermometer, Stethoscope, Pediatrician, AGE reader age reader and by bottom fundus camera for receiving wireless medical signals.

- Ability to complete algorithmic questionnaires and synchronize with the Medical Electronic Integrated Diabetes Folder.

- Introduction of personalized limits and selection of notifications per patient.

- Possibility of receiving notifications/ reinforcing messages from the Medical Electronic Comprehensive Diabetes File.

- Possibility to select goals from a nutritionist, immediate information through the Medical Electronic Integrated Care Diabetic File.

- Nutritional knowledge questionnaire based on scientific methodology.

- Ability to assess the current situation using a scaled barrier incentive scale.

- Produce automatic messages according to the options in the questionnaire.

- Ability to track targets set by diabetologist and dieticians nutritionists and diabetologists through the Integrated Diabetic E-Medical Medical File.

- Integration of the following algorithmic questionnaires: Quality of life questionnaire, Self-efficacy questionnaire for self-management of diabetes, Questionnaire on eating habits and Questionnaire on patients 'health status.

- User access control to certify and identify the user's rights when accessing the application at system level and application of telemedicine.

- Authorization to access information different by user and by type of information.

- Observance of the provisions of Law 2472/1997, EU 2016/679 (GDPR) regarding the Protection of Personal Data.

- Preservation of medical data in encrypted form.

- User interface friendliness.

- The error messages that the applications present to the end users,

should be in Greek and English and the users should be notified in terms familiar to them

• The technologies that will be used for the

• development of the application to ensure its easy maintenance and allow the expansion of its functionality by adding additional subsystems that will cover possible future needs.

• Open standard support: ensuring the viability and future expansion of the system, all offered development tools, server software as well as the application are based on open templates and are available under the terms of the GNU/GPL license.

• Systemic article architecture to allow future extensions and replacements, integrations, upgrades or changes to separate software or hardware components.

• Open architecture where the proposed/ offered software services, security and the database management system and application are based on proven mature and tested systems platforms in the open to facilitate its support and maintenance.

• Access to system functions should also be possible via BlueTooth portable devices at least for ECG, spirometry, oximetry, glucose, blood pressure, weighting and BMI tests.

• Find the files of the examinees/patients in a fast and easy way (e.g. use of demographics,etc.).

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