Counselling Support System with Emphasis on Drug Abuse

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Abstract

The use of computers in virtually all aspects of human activities is rapidly expanding. Simplification of activities for both people and organizations alike, by the use of advanced technological procedures and search for various ways to make things easier is fast becoming a norm in this generation. The counselling world is no exception, as various Counselling Support Systems (CSS) can now be found online to provide quality counselling to people via the Internet. In developing countries, the prevalence of drug abusers, lack of adequate counselling professionals, loss/mismanagement of sensitive client records and the un-professional nature of counsellors are some of the reasons why the design of a Counselling Support System (CSS) was designed. In order to achieve all set objectives and fulfil requirements, the Waterfall Model was adopted throughout the phases of development using design tools such as Use Case diagrams to show the functionality of each entity represented in the system and an Entity Relationship Diagram to show the relationship between all entities. The system was implemented using various development tools such as Hypertext Mark-up Language (HTML) for an attractive, yet easy to use Graphical User Interface (GUI), PHP and MySQL for the storage in the database. The counselling support corrects the problems stated earlier by providing a system that is available worldwide 24/7, ensures client confidentiality with adequate security checkpoints in place to promote counselling among drug abusers.

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The implementation of the support system increases availability of counselling services for drug users, slows down the rate of emerging drug abusers and helps understand new and better ways to help individuals round the world.

Keywords: Counselling; Counselling Support System; Drug Abuse; Decision Support System.

1. Introduction

In order to make progress in solving a particular problem, there needs to be a level of communication between the parties involved. "The most important thing in communication is hearing what isn't being said". Peter Drucker when saying this meant that communication is concerned with a deeper understanding of individuals. This is the focal point and cornerstone of counselling. It goes much deeper than just individuals exchanging words, but harnessing a much more personal experience in the session(s) that take place between these individuals in order to find problems, if they exist and then proffer solution. An individual that is not achieving set goals, not in total control of his/her life due to the intake of substances not prescribed by a doctor is most probably experiencing one or many of the side effects of drug abuse and is in need of counselling promptly. Varying factors such as peer and parental, work related, emotional, financial pressure may be attributed to this peculiar behavior. Different individuals seek counselling to help discover hidden potentials, combat adverse effects of substance abuse, communicate feelings in their lives that are not quite right and are bothering them, or to deal with feelings of downheartedness or nervousness [1].

Furthermore, another dimension of getting treatment (online) has since then been perceived as the primary pioneer of e-therapy [2]. Counselling is a process aimed at helping individuals to identify, clarify, and restructure personal views of their life's activities and also enable individuals reach set goals through meaningful well-defined options and a resolution of problems of either an emotional or interpersonal nature [3]. Counselling association of Nigeria was launched on the 11th of November, 1976 to proffer professional solutions to the growing need for such services [4]. In addition, the need for academic success has brought about the increase in use of hard drugs as a form by which students attain illusionary success [5]. Research has also shown that "the academic pursuit of such students who engaged in drug misuse was not unduly jeopardized, and that the abusers did not socialize extraordinarily, contrary to seemingly popular expectation" [6].

Decision Support Systems (DSS) belong to a particular class of computerized information system that supports organizational decision-making activities by sifting through, compiling large amount of information and picking between many choices available. They are intended in such a way that it helps administrators to select one of the many substitute solutions to a problem [7]. The reason for the design and implementation of this system is as a result of some of the following:

i. The prevalence of drug abusers
ii. The unavailability of counsellors for people seeking counselling.
iii. The loss, mismanagement, unauthorized access of sensitive client records.
iv. The un-professional nature of some counsellors

This research culminates in the implementation of a Counselling Support System for drug abusers, mainly youths and adults who are willing to tackle the use/abuse of drugs; determining their intake level of the various kinds and categories of drugs, sensitizing them on the dangers/hazards of these substances. Each counselling session consists of questions and a range of possible answers. After all the tests are conducted, the client is shown their result based on the score gotten from the online questionnaire issued to the client at the point of testing. During the course of assessment, and assuming there is no improvement observed in the client, a review of the problem can be done through examination and new targets mapped out as they both go over the counselling method all over again [3].

2. Review of Closely Related Works

The analysis of systems relatively similar in nature and functionality to the Counselling Support System (CSS) is done in this section. Key features, similarities, advantages and disadvantages are expatiated on.

2.1 Counselling For Self Employment: The Application of Decision Support System

It has been suggested that individuals with longer unemployment spells are less likely to be employed [8]. There existed a high level of long term unemployed individuals that needed addressing and the need to promote entrepreneurial skills. The system aimed at conveying the knowledge from past employment and provide new business opportunities that were directly related to the person's hobbies. The DSS was high in complexity; therefore there existed a need to valuate uncertainty at all stages.

2.2 A Decision Support System (DSS) For Guidance and Counselling in Nigeria

There is a large amount of unproductive and frustrated graduates; no thanks to the soaring rate of students entering tertiary institutions to study programs that have little relevance in their immediate society. Since there exists a scarcity and continuous unavailability of expert counsellors, a DSS was proposed as a stimulus towards the right direction for solving this large-scale dilemma. Having considered various factors ranging from the present discipline of the student to favourite subjects of the student, the system then recommends prospective and suitable courses of study. This resulted in a reduction of career mistakes by students entering tertiary institutions. The system is limited by the amount of varying degrees of correlation. Influence of friends, IQ and parental feedback makes the system strong as these also act as environmental factors for the student [1].

The American Counselling Association advises practitioners on ensuring that clients are intellectually, emotionally, and physically capable of using the computer application. It was also deduced that systems were built to ease the process involved in making robust inferences. These systems were very efficient in analyzing results and in the long run found to be very helpful in decision making practices.

3. Methodology

The methodology used in the development of this system is the Waterfall model which ensures completion of one phase of development before moving on to the next one in a predefined and sequential order. Adequate

preparation is emphasized as the overall workings (requirements) of the system is usually already known. The waterfall model life cycle is based on dependent phases for a successful implementation of the system. Each phase is dependent on the completion of the previous phase [9].

In reference to the waterfall methodology, stages adopted were as follows:

i.   System requirements analysis: Requirements are descriptions of the functionality or services provided by a system and its operational constraints. There are different types of requirements, and they capture different levels of details and different audiences.

User Requirements

The user requirements describe functions that are performed by the users on the system. They are represented in the use case diagram in form of actors (client and counsellor) and show the functionalities of both the client and the admin as shown in figure 1.
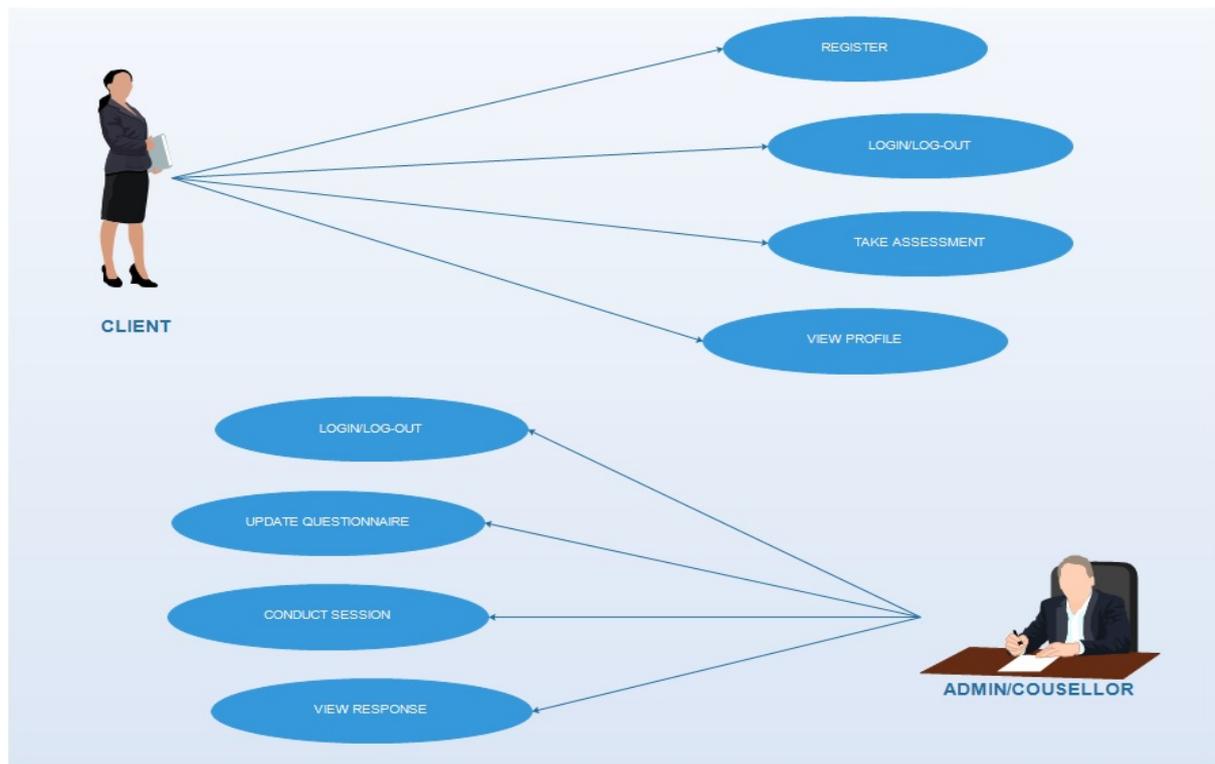
Figure 1: Use case diagram

3.1 Functional Requirements

Functional requirements are declarations of services the system should deliver. It is characterized by how the system should respond to specific inputs and how the system should perform in certain circumstances. Functional requirements to be performed by this system include to:

    i.   validate user login details of username and password.

    ii.   ensure that data on the system is secured by ensuring only the admin has access.

    iii.   allow registered users participate in counselling sessions.

    iv.   store and retrieve client data

    v.   generate session report based on questionnaire(s) issued.

3.1.1 Hardware and Software Requirements

The hardware requirements are:

    i.   Processor: Pentium III – 1.60 Hz.

    ii.   512 MB RAM or higher.

    iii.   Hard disk space or higher.

Whereas the software requirements are:

    i.   A functional web browser such as Google Chrome, Microsoft Internet Explorer, Mozilla Firefox.

    ii.   An operating system such as the likes of Windows (7, 8, 10), Linux, Mac OS.

    iii.   WAMP (Apache server)

    iv.   Operating System: Windows (2000, Vista, 7 and 8)

3.2 Non-Functional Requirements

These are constraints on the services or functions offered by the system. They include memory, time constraints and more. They specify system performance, security, availability and other emergent properties, and are more critical than individual functional requirements.

    i.   Availability: The system should be online 24 hours every day, since it aims to bridge the gap caused by the unavailability of counsellors.

    ii.   Portability: The system shall be platform independent and work on a variety of web browsers on both computers and mobile platforms.

    iii.   Speed: The time taken to get access to various components and navigating through the system would be very fast.

    iv.   Upgradability: Must be easily maintainable.

    v.   User-friendly: The system must be easy to use and simplified as much as possible.

    vi.   Reliability: The system must be robust enough to recover if/when failure occurs.

3.2 Entity Relationship Diagram

Entity Relationship diagrams as shown in figure 2, are visual tools that describe the relationship between a set of relating entities rather than instance of a single entity type. It is used to describe the logical relationship that exists between different tables and attributes of entities.
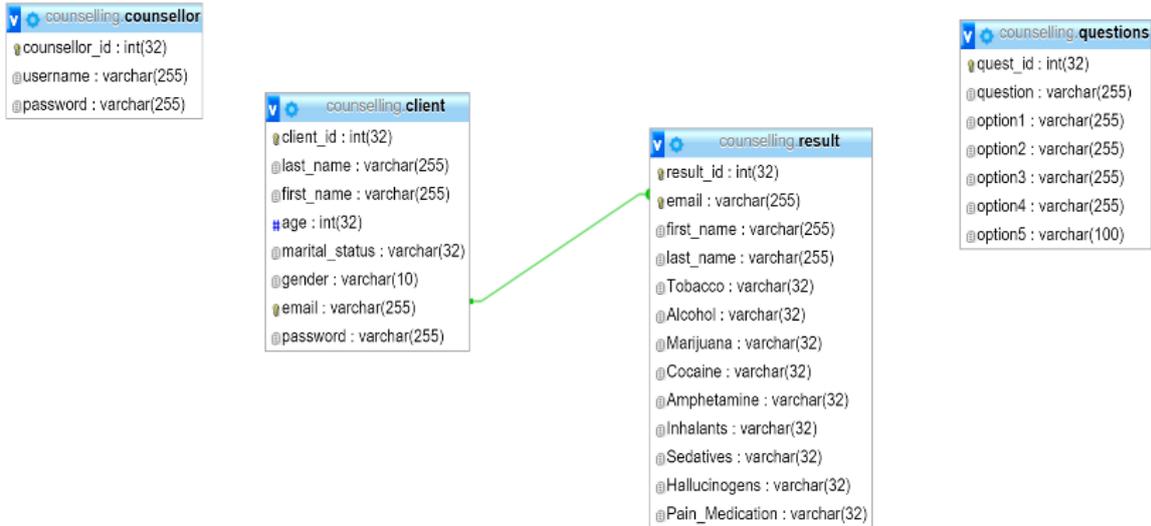
Figure 2: Entity Relationship Diagram

4. System Implementation and Testing

In order for one to grasp the full functionality of any system to be built, the system has to be implemented and tested in order to ensure that all possible errors are well taken care of. This phase of the waterfall model deals with the implementation and testing of the overall functionality of the system. All functionalities identified in the design and requirements phases are implemented and tested for errors. All errors that may have previously escaped the eyes of the team usually surface at this point.

4.1 Database Testing

The database is the data repository of the whole system. It contains all the data inputted, and all the data necessary for certain processes. It is therefore of pivotal importance to test the database in order to attain a database with data integrity and one that satisfies the atomicity, consistency, Isolation, and durability properties (ACID) of a database management system[10]. The database needs to be thoroughly tested as any flaw present will ultimately compromise the entire system. Figures 3 to 6 represent the tables present in the database [11].

#	Name	Type	Collation	Attributes	Null	Default	Extra
1	client_id	int(32)			No	None	AUTO_INCREMENT
2	last_name	varchar(255)	latin1_swedish_ci		No	None	
3	first_name	varchar(255)	latin1_swedish_ci		No	None	
4	age	int(32)			No	None	
5	marital_status	varchar(32)	latin1_swedish_ci		No	None	
6	gender	varchar(10)	latin1_swedish_ci		No	None	
7	email	varchar(255)	latin1_swedish_ci		No	None	
8	password	varchar(255)	latin1_swedish_ci		No	None	

Figure 3: The Client Table.

The client table as shown in Figure 3 stores information about the main users of the system. It is also responsible for validating user login details and ensures that there is no unauthorized entry to the system

Figure 4: The Admin/ Counsellor table

The Admin/Counsellor table as shown in Figure 4 checks the credentials of the administrator before being allowed to perform any operation on the system.

Figure5: The question table

The question table depicted in Figure 5 holds data for the questions and possible fields of options related to the question. It can only be accessed by the admin who is able to delete questions from the database.

Figure 6: The result table

The results table as seen in Figure 6 stores and analyses the results gotten from the user based on the different

types of drugs identified. It gives the user detailed response after the questionnaire is filled.

4.2 *Interface Testing*

It may be described as a type of testing that is carried out to evaluate if components of the system pass data and control correctly to one another. It is based on requirements and desired functionalities, since the goal is to test how well each component in the system obey a predefined test description, given a series of inputs [12].
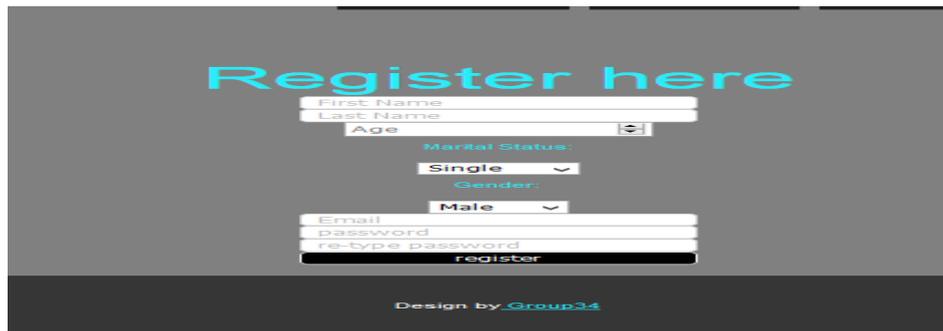

Figure 7: Home Page

Figure 8: Registration page

Whereas Figure 7 illustrates what the Home Page looks like, Figure 8 shows the registration page that every client must first go through before any counselling process can begin. In addition, Figure 9 represents user verification page in case incorrect credentials are keyed in for verification.

Figure 9: Login verification page

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5. Discussion of Results/Findings

The counselling management system determines the extent to which the use of hard drugs has affected an individual which will come off as helpful to the individual. The counselling support system promotes confidentiality and also efficient management of session records of each user and with its user friendly functionality, it is easy to have quick and easy sessions from the comfort of their homes. The CSS was designed basically to enhance the counselling process. It allows real time access to sessions, thereby improving the counselling process. It was also designed to enhance storage, retrieval, manipulation as well as reviewing of counselling sessions. Sessions were conducted on certain substance abuser using this system, and also same was done by a counselling practitioner. The results were then compared and the results gotten from the system accurately represented the mechanical form of counselling.

6. Recommendations

The CRMS meets a lot of expectations. However, it would perform better if the following recommendations and suggestions are considered.

i.   It is advised that individuals that make use of the system do so with the maximum level of honesty so as to obtain accurate results.

ii. Regular maintenance and security upgrades should be conducted to ensure effectiveness of the Counselling Support system in performing the required operations and authenticity of information at all times**.**

7. Limitation

The system limitation stems from the fact that it cannot detect the level of honesty on the part of the individual, with respect to the questions answered during each session. This in turn might be a major setback on the efficacy of the generated results required for decision making.

8. Future Research

In the future, improvements on the current system would include:

i.   Development of a mobile application for increased and easier access.

ii. A chat service to enable further counselling take place after the initial stages.

9. Conclusion

The counselling support system has made counselling process easier and faster. It enhances proper and efficient management of client records, promotes security on the clients side, since the outcome is only known by the client. This results in a confidential and more comfortable session for the individual.

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