

Nutri Demand: Nutritional Requirements Database for Indian Population

Siva Naga Suresh Purama, M. P Nishitha, M. Gnanavel, and S. P. Muthukumar

Abstract—There are a number of nutritional disorders/diseases endemic in India and around the globe. The aim of this project was to develop nutrient requirements database for Indian population and to acquire, evaluate, compile nutrient requirements for different age groups viz., infant, adolescent and adult, through an easy accessible web platform. To provide protein, energy requirements and recommended daily allowance for different age groups, nutrient utilization pattern software for various activities of human population was developed. The nutrient requirements are individualized by suitable programming which includes data like individual's body weight, height, sex, BMI, etc. and the end product is "User friendly nutritional requirement data retrieval system for each individual/ family at the hands of the consumer". Dynamic computational approach, bio-informatics programming with extensive PERL regular expressions was used to build a server and PHP web-scripting provides simple user interface and dynamic search engine for various daily nutrient requirements for the individual. The database structure designed to enable the user to derive the daily protein, energy, fat, vitamin and mineral requirements by linear programming. The methodology, schema/ structure, database, programming, results will be presented and discussed. This NutriDemand will also enable in the future development of personalized web based nutrition and diet adviser.

Index Terms—Nutrient, ICMR, personal, food, health, management, weight.

I. INTRODUCTION

The incidence of chronic and nutritional disorders in India and around the globe is alarming. This is mainly because of the food and lifestyle changes happening over the generations. Lack of health consciousness and awareness about the nutritional requirements, lack of proper nutritional advice/ consultancy aggravates the problems further more. The urban culture and busy schedules make people to provide least attention towards nutrition and health. Simultaneously, the developments in computer and communication technologies are exceedingly good and reached almost everyone around the globe. Considering this, the present database NutriDemand is planned to automate the personal nutritional requirements from the databases in real time.

The nutrient requirements will be individualized by automation which includes the data like individual's body weight, height, BMI, etc. and the end product will be "User friendly nutritional requirement data retrieval system for each

individual/ family at the fingertips of the consumer". The objectives are:

Protein, Energy requirements and Recommended Daily consumables for different age groups

Personalized Nutrient Requirement Database for individual/ family applications

Nutrient Utilization Pattern Solution in the form of software for Various Activities of Human Population.

II. SYSTEM DESIGN

The structural design of NutriDemand is shown in Fig. 1.

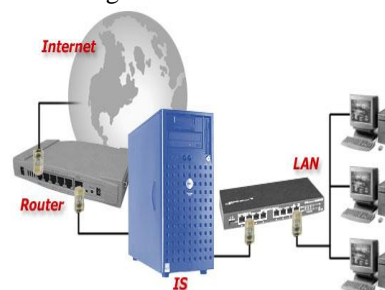


Fig. 1. Structure of nutridemand.

Admin can login and Insert the data in the Information Server which will be connected to Router.

Intranet users can retrieve the Data after successful login with their username and password

Based on the input, the user will get his/her Nutri log details.

III. IMPLEMENTATION

The aim of automation is to integrate the personalization of nutrient requirement database and nutrient database of food products through easily accessible platform. NutriDemand is a software solution and can be very easily handled by the people those who wants.

Using this program the user can calculate the protein, energy requirements and Recommended Daily Allowances (RDA) for different age groups, a personalized requirement Database for individual/ family applications, Nutrient Utilization pattern Software for Various Activities of Human Population is also an additional feature.

The implementation of NutriDemand consists of the following sections.

- Admin
- Registration
- User
- Nutrition
- Exercises

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Admin section will maintain and monitor the database by inserting, viewing, update, delete, food pattern details and exercises details etc.

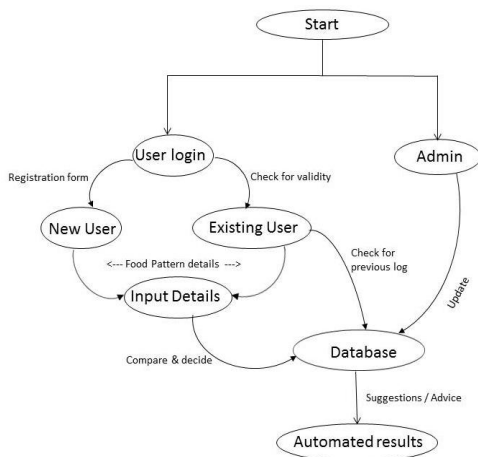


Fig. 2. The data-flow diagram of nutridemand.

Registration section is for registering the new users into this system by entering age, sex, date of birth along with desired username and password. After registration the user can login with his/her desired username and password.

In User section, one can login into the system after entering the valid user name and password. If valid, it will go to further process else it will ask to reset password by entering the exact options which he/she has registered first. The user can see his previous log history along with nutrient details and exercises by selecting the MyRoom option. When the user inputs his/her food pattern details, the program automation will compare with the existing data from the database and sends the automated results

In Nutrition section there will be two options for the user. The user can enter the food item details with quantity taken and the time of the food taken. After submitting the food details which were taken by user it displays the food details with the calories, protein, and fat which user has taken. The previous nutrient details can also seen by user. So that user can balance the nutrient diet by comparing both previous values and current values

Based on Nutrient details log the system asks the user to perform some exercises based on users BMI and Nutrient logs. It tells the user to perform particular exercise like cycling, walking etc. for burning the extra calories of food for perfect health.

The available data from ICMR (2008) is used and further refined with data available under public domain. The programming languages viz., HTML, PHP and MySQL are used for developing the databases. The database schema is conceptualized and rationalized, which includes admin login with add, update, delete, view, user login with registration, login, data submission, retrieval, display.

IV. RESULTS

The database design includes simple and dynamic user interface, personalized information inputs and retrieval, regular updates from admin, curation, modifications, checking for redundancy, etc.

The home page contains a brief description of the NutriDemand and its objectives. It has a login form for entry to both user and admin. Registered users can directly enter into the program and new users are required to fill a registration form to receive the password. This page is also used and implement for specifying about methodologies used to develop this solution, various calculations performed etc.

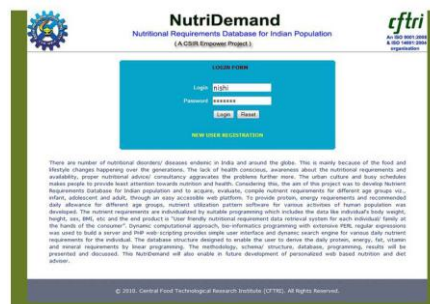


Fig. 3. Home page of nutridemand.

Data Input Format by Admin

The data related to different age groups Male / female, activities are extracted from ICMR (2008), curated using various other public sources and included in the database. The format for data input is shown in Fig. 4. The accessibility is restricted to admin only. The data can also be deleted/ removes using this form. Also these data can be viewed through a form in Fig. 6. The data so received from the admin will be stored in various databases in a predetermined order and used for retrieval. The data is segregated based on age ranging from Infants to 100 years, both male and female, pregnant, lactating women etc. The activities like heavy moderate and seldom are used to identify their activity levels and nutrient requirements are based on their activity inputs. Thus the database forms the backend formulation to suit the demand of every user, who logs in the database and seek the desired information.

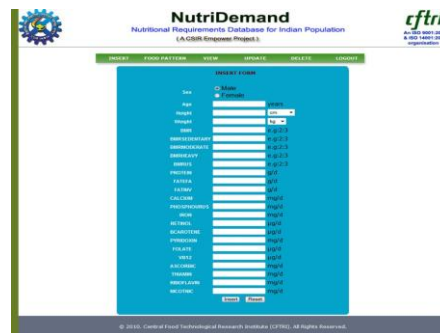


Fig. 4. Data input page for nutridemand by admin.

After user logs in, the user has to enter his / her sex, weight, height and age. The format for data input is given in Fig. 5

Once the user logs in, the program access the database and calculates the individuals nutrient requirements and shows the output as seen in Fig. 6.

Based on users BMI sometimes the user has to burn the calories of food by performing the exercises and sometimes the user has to gain the calories of food by performing some limited exercises suggested by the system database. The output form for the exercise as seen in Fig. 7.

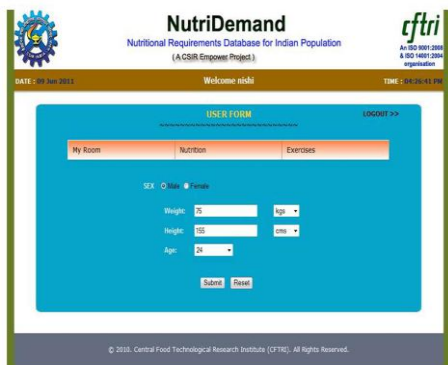


Fig. 5. Data input page for nutridemand by user.

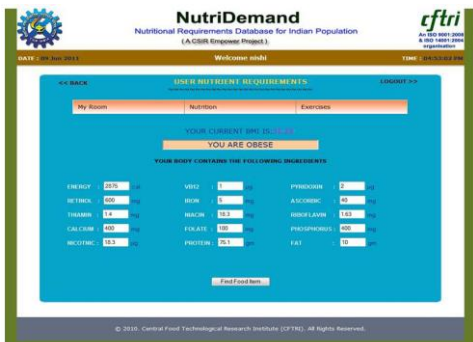


Fig. 6. Personalized output from nutridemand.



Fig. 7. Personalized output suggestion from nutridemand.

All the feedbacks from the public are received here and valuable suggestions are considered. The contacting details such as the relevant links and other information's are

available here.

V. CONCLUSION

NutriDemand encompasses the data for all the age groups, male/female, different activities, their individual nutrient requirements in a more comprehensive and consolidated manner. NutriDemand is more user-friendly and easily accessible solution aimed to reach everyone.

NutriDemand, a web-based nutrient requirement database can be individualized and the data for personal health and nutritional management can be easily retrieved. The database includes home page, login, add, delete, update, view at the front end in HTML and the data on the nutrient requirements for different age groups, sex, activity etc. at the backend. The webpages and MySQL databases are integrated using PHP for fully functional attributes.

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