



## A COMPARATIVE STUDY ON VALIDATION OF HEALTH BUDDY APP BY MANUAL NUTRIENT CALCULATION METHOD

Kumari P

Student, ManavRachna International University

Sharma M

Assistant Professor, ManavRachna International University

### ABSTRACT

Health buddy app was made in June, 2016. It was made by the group of five students of Delhi University. Health buddy app is an application which is used to track nutritional intake of an individual. It does not require any traditional method (i.e. manual calculation). This app gives results very frequently and works in a very efficient manner. The present study was conducted in January 2017 enrolled total 30 subjects from Manav Rachna International University, Faridabad, Haryana. Random sampling was done to collect a sample size of thirty between age group of 18-19 years. Questionnaire was formulated to collect qualitative data on demographic profile and health profile. Anthropometric measurements were done. Quantitative data on dietary intake was collected by 24 hour recall method and health buddy app. The results revealed that regarding nutrient intake, Mean & standard deviation of energy, protein, carbohydrate, fat, fibre, calcium, iron, potassium, sodium calculated by 24 hour dietary recall method was 2056.56±656.41, 91.07±41.7, 1775.4±84.23, 126.54±100.60, 31.87±138.73, 52.03±182.67, 12.7±9.58, 719.47±432.45 respectively and by health buddy app was 5784.95±10002.31, 394.23±559.27, 1432.20±1052.81, 308.33±107.06, 184.70±206.87, 5033.14±2487.70, 74.69±202.96, 7257.69±2794.65 respectively and the differences were statistically significant ( $P>0.05$ ). The study concluded that the health buddy app is not validated as the results are not similar within 5% error. That stated that health buddy cannot be used over 24 hour recall method.

**KEYWORDS** : Health buddy app, 24 hour recall method

### INTRODUCTION

Nutrition assessment is a comprehensive evaluation carried out by an RD using medical, and health, social, nutritional, and medication histories; physical examination; anthropometric measurements; and laboratory data. Nutrition assessment interprets data from the nutrition screen and incorporates additional information. The purpose of assessment is to gather adequate information in which to make a professional judgement about nutrition status (ASPEN, 2009). Assessment is the first step in the nutrition care process.

There are many ways to document dietary intake. During a nutrition interview the practitioner may ask that the individual ate during the previous 24 hours beginning with the last item eaten prior to the interview. Practitioner may train individuals on completing a food diary and they can request that the record be kept for either 3 days or one week. Documentation should include portion sizes and how the food was prepared. Brand names or the restaurants where the food was eaten can assist in assessing the details of the intake. Estimating portion sizes is difficult and requesting that every food be measured or weighed is time consuming and in practical.

During adulthood, adequate nutrition is essential to remain healthy and to ensure that our body functions properly. By the time one reaches adulthood, the body growth particularly in terms of height almost ceases, the breakdown and repair of body tissues goes on continuously. Therefore, individuals of this age (18 to 29 years), adequate amounts of all essential nutrients need to be provided through the diet for maintaining their physical and mental health. Not only this, proper nutrition during adulthood and earlier years of life ensures good health right until the old age.

Various factors which affect our body needs for different nutrients include age, gender, activity as well as body weight, height and composition i.e. the body physique. Apart from these, climatic conditions, physiological and pathological stress also influence the body's need for various nutrients.

Nutritional requirements of adult men and women differ primarily due to the variation in their body weights and body composition; and not due to any direct influence of gender. However in case of certain nutrients, particularly iron, the requirements differ due to their physiological differences.

Health buddy app was made in June, 2016. It was made by the group of five students of Delhi University. Health buddy app is an

application which is used to track nutritional intake of an individual. It does not require any traditional method (i.e. manual calculation). This app gives results very frequently and works in a very efficient manner. By this app, the nutrient intake of an individual can be calculated just in a few minutes only instead of taking 24 hour dietary recall. Therefore, it also saves time. The best thing about this app is that, it is the first app which includes recommended health tips and amazing facts which gives very valuable information to us.

### METHODOLOGY

A comparative study on validation of health buddy app & manual nutrient calculation method was done. The study was conducted in ManavRachna International University, Faridabad, Haryana, it was feasible and easily accessible to collect data and data collection was started in January, 2017. Random sampling was done to collect a sample size of thirty between age group of 18-19 years. From random sampling, the method chosen was **systematic sampling**.

- The list of the population units was made on the basis of alphabetical order.
- Determine the sampling fraction of classes were done on the basis of the following formula.  

$$K = N/n$$
 where, K= randomly selected student  
 N= total no. of students  
 n= no. of students required
- In B.Sc.(Nm&D) II, the total number of students are 67, so:  

$$K = N/n; 67/6 = 11.1$$

Therefore, every 11<sup>th</sup> student has been selected for sampling from this class.

- In B.Sc.(N&D) IV, the total number of students are 45, so:  

$$K = N/n; 45/6 = 7.5$$

Therefore, every 7<sup>th</sup> student has been selected for sampling from this class.

- In B.Sc.(N&D) VI, the total number of students are 33, so:  

$$K = N/n; 33/6 = 5.5$$

Therefore, every 5<sup>th</sup> student has been selected for sampling from this class.

- In M.Sc. II(N&D), the total number of students are 38, so:  

$$K = N/n; 38/6 = 6.3$$

Therefore, every 6<sup>th</sup> student has been selected for sampling from this

class.

- In M.Sc. IV(N&D), the total number of students are 25, so:  
K=N/n; 25/5=5

Therefore, every 5<sup>th</sup> student has been selected for sampling from this class.

The inclusion criteria of the study was subject who were willing to participate & aged between 18-29 years were included and the exclusion criteria was the subjects who were not willing to participate & aged above 29 years & the subjects. Questionnaire was formulated to collect data on demographic profile and health profile. Anthropometric measurements were taken such as height, weight, waist circumference and hip circumference. Quantitative data on dietary intake was collected by 24 hour recall method and health buddy app. Statistically analysis was done by using SPSS 24 version.

**RESULT & DISCUSSION**

The research was conducted on the validation of health buddy app, 30 subjects were taken & the technique chosen was random sampling. Adult age group was chosen i.e. (18- 29 years) for selection of subjects. The study was conducted in ManavRachna International University and the students of Nutrition & Dietetics were selected.

**Table 1 Age of the subjects**

Particulars	N	Mean±SD
Age	30	20.96±2.20

Table no. 1 depicted that the Mean and Standard deviation of the age of total subjects was 20.96±2.20.

**Table 2 Anthropometric Measurements of the subjects**

Anthropometric Measurements	N	Mean±SD
Height	30	160±6.23
Weight	30	55.7±8.21
Waist circumference	30	30±1.89
Hip circumference	30	33.4±2.18

Table no.2 depicted that the Mean and Standard deviation of the height of 30 subjects was 160±6.23, weight was 55.7±8.21, waist circumference was 30±1.89, hip circumference was 33.4±2.18.

**Table 3. Distribution of subjects on the basis of BMI:**

BMI	N	%
Underweight >18.50	1	3.33
Normal weight 18.50- 23	21	70
Overweight 23.00- 24.50	3	10
Obese 24.50<	5	16.7

Table no. 3 stated that according to the latest Asian BMI classification, 70% of the subjects were having normal weight, 16.67% were overweight and 10% were obese and 3.33% belong to underweight category.

**Table 4. Nutrient Intake of the subjects**

Nutrient calculation	Manual data Mean±SD	Health buddy app Mean±SD	P value (T-test)
Energy	2056.56±656.41	5784.95±1002.31	.006
Protein	91.07±41.7	394.23±559.27	.004
Carbohydrates	177.54±84.23	1432.20±1052.81	.000
Fats	126.54±100.60	308.33±107.06	.000
Fibre	31.87±138.73	184.70±206.87	.001
Calcium	52.03±182.67	5033.14±2487.70	.000
Iron	12.74±9.58	74.69±22.96	.137
Potassium	719.46±432.45	7257.69±2794.65	.000
Sodium	81.39±59.16	4096.13±2162.59	.000

Table no. 4 depicts that the nutrient profile stated that the Mean & standard deviation of energy, protein, carbohydrate, fat, fibre, calcium, iron, potassium, sodium calculated by 24 hour dietary recall method was 2056.56±656.41, 91.07±41.7, 1775.4±84.23, 126.54±100.60, 31.87±138.73, 52.03±182.67, 12.7±9.58, 719.47±432.45 respectively. On the other hand, mean & standard deviation of energy, protein, carbohydrate, fat, fibre, calcium, iron, potassium, sodium calculated by health buddy app was 5784.95±10002.31, 394.23±559.27, 1432.20±1052.81, 308.33± 107.06, 184.70±206.87, 5033.14±2487.70, 74.69±202.96, 7257.69± 2794.65 respectively and the differences were statistically significant.

**Table no. 5 Distribution of table on the basis of nutrition adequacy ratio**

% adequacy		Calculated		Health buddy app	
		N	%	N	%
<b>Energy</b>					
>0.66	Inadequate	3	10	4	13.3
0.66-1	Adequate	9	30	6	20
<1	Over adequate	18	60	20	66.7
<b>Protein</b>					
>0.66	Inadequate	3	10	1	3.3
0.66-1	Adequate	4	13.4	2	6.7
<1	Over adequate	23	76.6	27	90
<b>Carbohydrates</b>					
>0.66	Inadequate	4	13.4	7	23.3
0.66-1	Adequate	12	40	7	23.3
<1	Over adequate	14	46.6	16	53.4
<b>Fat</b>					
>0.66	Inadequate	6	20	5	16.6
0.66-1	Adequate	8	26.6	4	13.4
<1	Over adequate	16	53.4	21	70
<b>Fiber</b>					
>0.66	Inadequate	3	10	1	3.3
0.66-1	Adequate	2	6.7	1	3.3
<1	Over adequate	25	83.3	28	93.4
<b>Calcium</b>					
>0.66	Inadequate	2	6.7	7	23.3
0.66-1	Adequate	7	23.3	6	20
<1	Over adequate	21	70	17	56.7
<b>Iron</b>					
>0.66	Inadequate	23	76.6	7	23.3
0.66-1	Adequate	5	16.7	4	13.4
<1	Over adequate	2	6.7	19	63.3
<b>Potassium</b>					
>0.66	Inadequate	23	76.6	4	13.4
0.66-1	Adequate	2	6.7	3	10
<1	Over adequate	5	16.7	23	76.6
<b>Sodium</b>					
>0.66	Inadequate	23	76.6	3	10
0.66-1	Adequate	3	10	6	20
<1	Over adequate	4	13.4	21	70

Table 5. depicted that Regarding Nutrient calculation, as per energy, nutrition adequacy ratio stated that 60% were over adequate by manual calculation&66.7% were also over adequate according to health buddy app. Regarding nutrient calculation, as per protein, nutrition adequacy ratio stated that, 76.6% were over adequate by manual calculation&90% were also over adequate by health buddy app. Regarding nutrient calculation, as per carbohydrates, nutrition adequacy ratio stated that, 46.6% were over adequateby manual calculation&53.4% were also over adequate by health buddy app. Regarding nutrient calculation, as per fat, nutrition adequacy ratio stated that, 53.4% were over adequate by manual calculation&70% were also over adequate by health buddy app. Regarding nutrient

calculation, as per fiber, nutrition adequacy ratio stated that, 83.3% were over adequate by manual calculation & 93.4% were over adequate by health buddy app. Regarding nutrient calculation, as per calcium, nutrition adequacy ratio stated that, 70% were over adequate by manual calculation & 56.7% were over adequate by health buddy app. Regarding nutrient calculation, as per iron, nutrition adequacy ratio stated that, 76.6% were inadequate by manual calculation & 63.3% were over adequate by health buddy app. Regarding nutrient calculation, as per potassium, nutrition adequacy ratio stated that, 76.6% were inadequate by manual calculation & 76.6% were over adequate by health buddy app. Regarding nutrient calculation, as per sodium, nutrition adequacy ratio stated that, 76.6% were inadequate by manual calculation & 70% were over adequate by health buddy app.

### CONCLUSION

The study concluded that the health buddy app is not validated as the result are not similar with in 5% error. That stated that health buddy cannot be used over 24 hour recall method.

### REFERENCES:

1. Kumud, Khanna., Sharda, Gupta., Santosh, Jain. 1997, "Nutrition during adulthood" published, 48-55.
2. Maged, N., Kamel, Bolos., Ann C., Bewer., Chantekarimkhari. 2014, "Mobile medical & health apps: online". J public health inform, 5(3), 229.
3. Kenvin, Anderson., Oksana, Burford., Lynna, Emmerton. 2016, "Mobile Health apps to facilitate Self care", 23.