

## Smartphones in Family Wellbeing: A Study on Access and Use of Food and Health Apps among Women Smartphone Users

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### Abstract

Smartphones play a prominent role in providing access to health and nutrition-related content from various sources. People are more likely to adopt healthier eating habits and make better food decisions when exposed to such content, ensuring their families wellbeing. Introduction to healthy food products and information about their benefits, ease, and mode of use can enable more people to adopt healthier eating habits and make better food decisions for their families. Availability of food recipes, health care routines, nutrition-related information, and weight management programs in digital platforms enable increased use. Both men and women use digital health and nutrition apps to ensure their own as well as the wellbeing of their families. Mobile applications are predominantly used in self-monitoring of individuals' food intake and related physical activities, promoting a healthy lifestyle. However, the usage in rural regions, especially among women, must be explored. This paper explores the access and use of food and health apps among women smartphone users in rural households. Regarding women smartphone users in rural regions, this study identifies that their usage is high towards referring to cooking recipes and health information.

**(Keywords:** Smartphones and Women, Digital Nutrition, Family wellbeing, Food and health Apps, Mobile apps

## **Introduction**

The access and use of smartphones among rural communities have increased over the years. In a post-COVID-19 scenario, every household has a minimum of one smartphone. The availability of smartphones for affordable prices has contributed to this change. Like urban regions, in rural areas, not all own individual smartphones, but primarily the family head, predominantly the father, owns the phone. Studies show women have access to their husbands, fathers, or sons' smartphones. Women had to wait until the evening for them to return from work so that they could use their phones. Research on rural women's phone use shows that they primarily use it for communication, entertainment, and information needs. This paper explores smartphone usage patterns and the type of food and health apps women use in rural households. The paper primarily concentrates on how the user contributes to the family's health and wellbeing.

## **Background of the study**

In the Indian context, cooking is a gendered role primarily done by the women of the family. The women in the rural household do the domestic work, including cooking, cleaning, children, and elder care, as their primary responsibility. This is a mundane gendered activity that women of every household do. Many women must be made aware of the gendered context of assigning cooking-related activities to them. Women unaware of their rights see domestic chores involving cooking as their primary chores. Thus, cooking and food are integral to women's lives in India – either forced as a ritual or liked by women. So, women are the central or primary decision makers deciding the family's nutritional intake for the day. Especially for children, the mothers cook all day's meals, including lunch box items. Smartphones provide unconditional access to newer food recipes and nutritional health information. It has enhanced the scope of using smartphones to access and share knowledge on food recipes, nutrition, and health information for children and family wellbeing. Research shows that among the different information needs, women's usage of smartphones is towards accessing food recipes and nutritional health

information. This can enable changes in food choices, ingredient choices, and cooking patterns contributing to the family's health and wellbeing.

Studies show that many people are becoming health conscious, and the use of digital gadgets like smartphones enhance health awareness. This reflects changes in cooking and food consumption patterns. Smartphones make access to food recipes for healthy cooking and knowledge of nutritional values easy. Such digital nutritional interventions are done by governments in different states in India to improve the health and nutrition of the people. Especially in primary health centers, digital boards are displayed with educational content on food and nutrition. Smartphone applications for nutrition and a healthy lifestyle may be a cost-effective and valuable way to enlighten the public about diet and nutrition (Ulfa, Setyonugroho, Lestari, Widiasih, & Quoc, 2022).

### **Review of literature**

Access to the internet via digital gadgets like smartphones enables access to information on food, health, and wellbeing. A study by Gunn et al., (2021) investigates the extent of Australian farmers' current Internet usage towards researching health-related information and contributing to promoting their mental health and wellbeing. According to a study by Samoggia & Riedel (2020), apps that provide nutritional information enhance the public's perception and understanding of healthy eating, foster motivation, and encourage healthy eating habits. Nutrition information applications can be a helpful tool for public health to change how consumers perceive obstacles to good eating. According to a study by Ipjian & Johnston (2017), smartphone technology facilitates dietary change in healthy adults, as mobile apps were found to be more effective for changing diet behaviour than conventional modes. A study by Zarnowiecki, et al., (2020), state that digital nutrition promotion programs that target parents can be successful in enhancing children's and parents' nutritional results. In a study by Clarke, Neffa-Creech, and Evans (2022), the researchers found that the app, VeggieBook, increased household cooks' use of vegetables in meals and snacks. Further, it states that access to VeggieBook increased the children's collaboration with the mothers towards assisting them in cooking activities.

The review study by Ahmad, Khan, Bibi, Ullah, & Shah (2020) has evaluated the features and use of several mobile phone health applications, which aid people in overcoming and keeping track of the aforementioned health-related concerns. A study by Coughlin, Whitehead, Sheats, Mastromonico, & Smith (2016), states that Apps that automatically track physical activity (such as steps taken), track progress towards physical activity objectives, and are user-friendly and adaptable enough to be used with a variety of physical activities receive positive feedback from participants of different ages and genders. The above study's findings show that although the intervention impact is modest, smartphone apps can effectively encourage physical activity. Ulfa, Setyonugroho, Lestari, Widiasih, & Quoc (2022) identify the mobile application use options for nutritional self-monitoring by examining 205 publications between 2007 and 2021 from the Scopus database. The study finds that most of the research focuses on identifying shifts in dietary self-monitoring behaviour among users of efficient mobile applications. Thus, smartphone apps contribute to the wellbeing of individuals and the family.

**Objectives of the study**

The study aims to assess women's smartphone usage patterns in accessing food and health apps in rural households and its contribution to family wellbeing.

**Methodology**

The study is done among married women in rural households. Using a primary level survey, data was collected among 120 respondents from Tirunelveli district, Tamil Nadu, with a self-structured questionnaire. The respondents' demographic details and usage patterns of mobile phone apps, cooking, and health apps were collected using the questionnaire. Further, in-depth interviews were conducted among 17 respondents to explore the purpose of using cooking and health apps and their benefits in enhancing family wellbeing.

**Demographic Details of the Respondents**

**Table 1**  
**Demographic Profile of the Respondents**

S. No	Variables	Frequency	Percentage
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1.1.	Age	20-30yrs	49	40.8%
		31-40yrs	40	33.3%
		41-50yrs	21	17.5%
		51 and above	10	8.3%
1.2.	Occupation	Housewife	42	35.0%
		Daily wages	30	25.0%
		Public sector	17	14.2%
		Private sector	16	13.3%
		Self-employed	15	12.5%
1.3.	Educational Qualification	School Level Education	53	44.2%
		Higher Education	48	40.0%
		ITI / Diploma	10	8.3%
		PG and above	09	7.5%
1.4.	Monthly Family Income	5,001-10,000	41	34.2%
		25,001 and above	22	18.3%
		Under 5,000	16	13.3%
		10,001-15,000	18	15.0%
		15,001-20,000	18	15.0%
		20,001-25000	05	4.2%
1.5.	Family Type	Joint family	34	28.3%
		Single-family	86	71.7%
1.6.	Number of children	One	39	32.5%
		Two	55	45.8%
		Three	21	17.5%
		Four and above	05	4.2%
1.7.	Years of married life	2-5 years	33	27.5%
		6-10 years	22	18.3%
		11-15 years	37	30.8%
		16-20 years	07	5.8%
		above 20years	21	17.5%

### Age of the respondents

The data in Table 1.1 shows the frequency distribution of the age of the respondents. The majority of the respondents, 40.8%, belong to the age category of 20 to 30 years, and 33.3% percentage in the age category of 31 to 40- years. 17.5% of the respondents belong to the age category of 41 to 50 years, and 8.3% belong to the age category of 51 and above.

### **Occupation of the respondents**

The data in Table 1.2 shows the frequency distribution of occupation of the respondents. Among most respondents, 35.0% are homemakers/ housewives, 25.0% are daily waged labourers, 14.2% are public sector employees, 13.3% are private sector employees, and 12.5% of the respondents are self-employed.

### **Education of the respondents**

The data in Table 1.3 shows the frequency distribution of education of the respondents. The majority of the respondents, 44.2% have school-level education, 40.0% have studied up to higher education, 8.3% have studied ITI/Diploma, and 7.5% are post-graduates or above.

### **Monthly family income of the respondents**

The data in Table 1.4 shows the frequency distribution of the monthly income of the respondents. Most respondents, 34.2%, have their family income in the category Rs.5001-Rs. 10,000, 18.3% of the respondents in the category of Rs 25,001 and above, 15% in Rs 10,001- Rs. 15,000 and 15,001-20,000. The family income of 13.3%and 4.2% of the respondents lie in the category under Rs. 5000 and Rs. 15,001-20,000 respectively.

### **Family type of the respondents**

The data in Table 1.5 shows the respondent's family type. The majority, 71.7% of the respondents, are from nuclear families, and 28.3% of the respondents are from joint families.

### **Number of children**

The data in the table 1.6 shows the number of children of the respondents. Majority 45.8% of the respondents have two children, 32.5% have only one child, and 17.5% of respondents have three or more children, the data also shows that 4.2% of respondents have four and above children.

### Years of married life

The data in Table 1.7 shows the details of the respondents' years of married life. A majority, 30.8% of the respondents have been married for 11-15 years, 27.5% have been married for 2-5 years, 18.3% have been married for 6-10 years, 17.5% have been married for above 20 years, and 5.8% have been married for 16-20 years.

### Findings and Discussion

#### 1. Usage of Mobile Apps

Table. 2.

Usage of different types of mobile apps

Category of the mobile app	Usage of the Mobile Apps		Total	Mean	Medium	Std. div
	Yes	No				
Cooking apps	81 (67.5%)	39 (32.5%)	120	.68	1.00	.470
Music apps	58 (48.3%)	62 (51.7%)	120	.48	0.00	.502
Health apps	51 (42.5%)	69 (57.5%)	120	.43	0.00	.496
Travel apps	13 (10.8%)	107 (89.2%)	120	.11	0.00	.312
Others	13 (10.8%)	107 (89.2%)	120	.11	0.00	.312

Table.2. shows the details of the respondents' usage of different types of mobile apps. Among five major mobile apps, cooking apps are used by the majority, 67.5% of the respondents, next to music apps, health apps, travel, and other apps. These findings confirm that users consult the app for cooking ideas and nutritional guidance, supporting the development of good eating habits

(Ipjian & Johnston, 2017). Next to music apps, health-related app usage is found among 42.5% of the respondents. Especially families with children use more cooking apps to promote healthy eating habits. The use of digital health applications enables the participation of its users towards increasing parental support for improving their children’s dietary habits (Zarnowiecki et al., 2020).

**Hypotheses Testing**

A chi-square test was done to investigate whether the respondents' demographic variables (Occupation, Education, family Income) had any relationship with the respondents' cooking app usage.

**Null Hypothesis 1:** There is a significant association between the use of cooking apps and the demographic variables of the respondents

**Table.3.**

**Chi-square results demonstrating the relationship between women respondent’s daily use of cooking apps with their demographics**

Demographic Variables	Categories	Daily Use of Cooking Apps		Grand total	Chi-square value	df value	P-value
		Usage	No Usage				
Monthly Family Income	Under 5,000	09	07	120	5.609 <sup>a</sup>	5	.346
	5,001-10,000	31	10				
	10,001-15,000	12	06				
	15,001-20,000	11	07				
	20,001-25000	05	00				
	25,001 and above	13	09				
Occupation	Housewife	29	13	120	7.265 <sup>a</sup>	4	.123
	Daily wages	16	14				



	Self-employed	13	02				
	Private sector	13	03				
	Public sector	10	07				
<b>Educational Qualification</b>	School level education	38	15	120	1.663 <sup>a</sup>	3	.645
	Higher Education	30	18				
	ITI / Diploma	06	04				
	PG and above	07	02				
	within 1 hour	24	14				
	above 5hours	14	05				
	3-5hours	07	05				

In Table 3, data on monthly family income and cooking app usage have the values  $X^2=5.609^a$ ,  $df =5$ ,  $p= .346$ ; since  $p>0.005$ , the null hypothesis is accepted, and there is no significant association between monthly family income with the usage of cooking apps by the respondents. Therefore, the monthly family income of the respondents does not influence the use of cooking apps.

In Table 3, data on the occupation of the respondents and cooking app usage have the values  $X^2=7.265$ ,  $df =4$ ,  $p= .123$ ; since  $p>0.005$ , the null hypothesis is accepted, and there is no significant association between the occupation of the respondents with the usage of cooking apps. Therefore, the occupation of the respondents does not influence the use of cooking apps.

In Table 3, data on the educational qualification of the respondents and cooking app usage have the values as  $X^2=1.663^a$ ,  $df =3$ ,  $p= .645$ ; since  $p>0.005$ , the null hypothesis is accepted and there is no significant association between the educational qualification of the respondents with the usage of cooking apps. Therefore, the educational qualification of the respondents does not influence the use of cooking apps.

Therefore, null hypothesis 1 is accepted, and there is no significant association between the use of cooking apps and the respondents' demographic variables (monthly family income, occupation, and educational qualification).

**Null Hypothesis 2:** There is a significant association between the usage of health apps and the demographic variables monthly family income and educational qualification of the respondents.

**Table.4.**

**Chi-square results demonstrate the relationship between the respondent’s daily use of health apps with their demographics**

Demographic Variables	Categories	Daily Use of Health Apps		Grand total	Chi-square value	df value	P-value
		Usage	No Usage				
Monthly Family Income	Under 5,000	05	11	120	7.106 <sup>a</sup>	5	0.213
	5,001-10,000	20	21				
	10,001-15,000	11	07				
	15,001-20,000	04	14				
	20,001-25000	02	03				
	25,001 and above	09	13				
Educational Qualification	School level education	18	35	120	3.015 <sup>a</sup>	3	0.389
	Higher Education	23	25				
	ITI / Diploma	05	05				
	PG and above	05	04				

In Table 4, data on monthly family income and health app usage have the values as  $X^2=7.106^a$ ,  $df =5$ ,  $p= .213$ ; since  $p>0.005$ , the null hypothesis is accepted, and there is no significant association between monthly family income with the usage of health apps by the respondents. Therefore, the monthly family income of the respondents does not influence the use of health apps.

In Table 4, data on the educational qualification of the respondents and health app usage have the values as  $X^2=3.015^a$ ,  $df =3$ ,  $p= .389$ ; since  $p>0.005$ , the null hypothesis is accepted and there is no significant association between the educational qualification of the respondents with the usage of health apps. Therefore, the respondents' educational qualification influences the use of health apps. Therefore, null hypothesis 2 is accepted, and there is no significant association between the use of health apps with the respondents' monthly family income and educational qualification.

**Null Hypothesis 3:** There is a significant association between the usage of health apps and the occupation of the respondents

**Null Hypothesis 4:** There is a significant association between the usage of health apps and hours of internet usage by the respondents

Table. 5.

**Chi-square results demonstrate the relationship between the respondent's daily use of health apps with their occupation and hours of usage of the internet**

Demographic Variables	Categories	Daily Use of Health Apps		Total	Chi-square value	df value	P-value
		Usage	No Usage				
Occupation	Housewife	22	20	120	10.626 <sup>a</sup>	4	0.031 <sup>*</sup>
	Daily wages	08	22				
	Self-employed	03	12				
	Private sector	10	06				
	Public sector	08	09				
Hours of usage	1-3 hours	21	30	120	10.457 <sup>a</sup>	3	0.015 <sup>*</sup>
	within 1 hour	11	27				
	above 5hours	14	05				
	3-5hours	05	07				

In Table 5, data on the occupation of the respondents and health app users have the values as  $X^2=10.626^a$ ,  $df =4$ ,  $p= 0.031^*$ ); since  $p<0.005$ , the null hypothesis is rejected and there exists a significant association between the occupation of the respondents with the usage of health apps. Therefore, the occupation of the respondents influences the use of health apps.

In Table 5, data on hours of usage of internet usage and health app usage have the values  $X^2=10.457^a$ ,  $df =3$ ,  $p= 0.015^*$ ; since  $p<0.005$ , the null hypothesis is rejected, and there exists a significant association between hours of internet usage of the respondents with the usage of health apps. Therefore, the respondents' internet usage hours influence the use of health apps.

### Findings and Discussion

Women's use of mobile applications is found to be primarily cooking apps, followed by music apps, health apps, and other apps. People are more likely to adopt healthier eating habits and make better food decisions when they are exposed to education-based interventions, such as increased nutrition knowledge. In the discussions on the type of mobile apps, the respondents state, *"I can get recipes and medical information from the cooking apps and YouTube videos. It gives me an idea of new recipes for cooking millet and healthy cereals, snacks, and breakfasts for my children. Using cooking apps has made my family eat good food which is affordable for us"*. Parents, especially mothers, express their happiness in getting their children tiffin or lunch box recipes.

Using cooking apps also helps them identify food rich in vitamins and minerals and boosts immunity. *"I look at what foods are good for immunity for my children. I look at what nutrients are in vegetables"*. Also, another respondent stated that *"I watch and learn about nutritional foods related to health. It is used to collect information related to vegetable and fruit juices by using the available seasonal fruits we get in our village"*.

Knowledge gained on reproductive and menstrual health is a primary motivation for the use of health apps by the respondents. Respondents stated, *"I learn tips to overcome irregular periods naturally. Information on reproductive health, early pregnancy symptoms, care during pregnancy, and menstrual hygiene are available. It is possible to know and monitor the developments from day 1 of conception fetal development stages from one to nine months"*. Another respondent stated, *' I give health advice on menstrual hygiene to young girls in our village and ask them to use the health apps'*.

Apart from the above, the use of health apps in monitoring diet, weight loss, and balance finds a prominent place among the respondents. The respondents state, *"I learned very easy tips on weight reduction and steps to get started with intermittent fasting for weight loss."* Respondents also use health apps related to the maintenance of physical beauty by means of natural ways. However, sometimes they also face problems when they follow certain medications by referring to online content. One respondent stated, *"My face was full of pimples, dark pimple marks, and I tried each & every product that claimed to help acne, but nothing helped me the way it should. So, I changed to natural remedies found online, and it saved me money, and I feel better now."*

## **Conclusion**

The study finds that women smartphone users in rural households use digital nutritional and health information by accessing mobile applications. This gives them more choices of consumption of healthy food available in their regions. Most study participants share their experiences of contributing to healthy eating habits in their families. Also, vital health information on menstrual hygiene, reproductive health, and pre, and post-natal care provides more scope for individual and family wellbeing. However, the danger of over-information or misinformation can have more severe consequences on the people when any Youtuber shares health-related vital information without assessing their credibility. So, there is a need to educate rural women towards identifying fake and misinformation related to food and health information they access.

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