

## ORIGINAL ARTICLE

# EpiCollect5 Software Ease of Use among Medical students: Evaluation Survey

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## ABSTRACT

**Context:** Mobile- and web-based application like EpiCollect5 makes work easier by paving a way of paperless and easy way of data collection and exporting. **Aim:** The aim of the study was to evaluate the ease of use of EpiCollect5 software among the medical undergraduate's students who had used this application. **Settings and Design:** A cross-sectional study was conducted among undergraduate students in a tertiary care institute. **Materials and Methods:** The present study was conducted using a pre-tested semi-structured and self-reported questionnaire to obtain information on ease of use of EpiCollect5 software from the medical undergraduates. The data entry was done in Epidata 3.1 while analysis was done using Epidata 2.2.2.182. **Results:** It was easy and simple to use the EpiCollect5 software reported by majority (94%) of the students and almost 90.6% of the participants felt that the software is user friendly. **Conclusion:** Majority of the students agreed with the user-friendly nature of the software and its applicability in collecting data from the community.

**Key words:** Data collection, EpiCollect5, Mobile application, Software

## INTRODUCTION

Epidemiologists often collect data in the field and need to enter their data into a database for further analysis. The increasing availability and decreasing cost of mobile devices running the Android (4.4+) and iOS (8+) which has both GPS and Google Maps among the other existing features, which provides new opportunities for developing mobile phone applications, which in conjunction with web applications, allow two-way communication between field workers and their project databases.<sup>[1]</sup> One such mobile and web-based application is EpiCollect5 which is free and easy for data collection. Data are collected (including GPS and media) using multiple

devices and all data can be viewed on a central server (through map, tables, and charts). And more conveniently, all these data can be exported into suitable CSV and JSON format. With increasing acceptance and being an easy tool for data collection, we conducted a study among the medical undergraduates students' of our institution who had used this application during their field survey to evaluate the ease of use of this EpiCollect5 software.

### Aim and Objective(s)

The aim of the study was to evaluate the ease of use of EpiCollect5 software among the medical undergraduate's students who had used this application.

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## MATERIALS AND METHODS

### Study Design and Setting

The present cross-sectional study was conducted in a medical college, Pondicherry.

### Study Population

The study was conducted among the medical undergraduate students who used the EpiCollect5 software for data collection in their field survey.

### Study Period

The current study was conducted between April and May 2019 (2 months).

### Study Instrument

A pre-tested semi-structured and self-reported questionnaire was used to get information from the medical undergraduates.

### Inclusion Criteria

Students who used the software for data collection were included in the study.

### Exclusion Criteria

The students who were not present at the time of data collection were excluded from the study.

### Methodology

The quantitative data were collected by the study investigator by administering self-reported questionnaire among 149 medical undergraduate's students.' Information regarding ease of use of software was obtained.

### Statistical Analysis

The quantitative data entry was done in Epidata 3.1 while analysis was done using Epidata 2.2.2.182. The data are presented in the form of numbers, distribution and percentages, median, and Inter quartile range (IQR) in tables and figures.

### Ethical Consideration

Ethical permission was obtained from Institutional Ethical Committee before conducting the present study. All the information collected was kept confidential by the researcher and the study guide during the study period and after the study.

## RESULTS

The present study was conducted using a pre-tested semi-structured and self-reported questionnaire to obtain information on the usage of EpiCollect5 software from the medical undergraduates. All the undergraduate students in this university were exposed to the EpiCollect5 software during the community posting which is held in the 2<sup>nd</sup> year of the medical curriculum. A total of 149 medical undergraduates were enrolled in the study. Majority of the students belong to the age of  $19 \pm 1.8$  years. Around 72% of the students were girls and almost all the participants were from urban residence. The results of this study will be presented in three domains, namely, user-friendliness, software related and applicability related issues. Responses of the study participants regarding the ease of use of EpiCollect5 software are represented in Table 1.

### User Friendliness

Around 94% of the students agreed that it was easy and simple to use the EpiCollect5 software and almost 90.6% of the participants felt that the software is user friendly.

About half of the study participants (56.4%) perceived that they can use the software without written instructions. More than two-third of the students (76.5%) did not notice any inconsistencies while using the software. Only a minimal number of students (1.3%) disagreed from the fact that they learned to use it quickly. Some of the students (7.3%) felt that it was hard to remember about how to use the software. Hence, the EpiCollect5 software is user friendly and it is preferred by many students as evident from Table 1.

### Applicability Issues

Table 2 represents the applicability issues with regards to EpiCollect5 software. Majority of the medical undergraduates (78.6%) agreed that EpiCollect5 software helped them to be more effective and productive when compared to other commonly used softwares such as Microsoft Excel and around 18.1% of the students were undecided about the same. Near to half of the participants, 41.7% agreed that there is a misconception among public for using mobile for collecting data but one-fourth of the participants disagreed from the same fact (24.1%).

### Software Related Issues

The medical undergraduates were asked about the ease of installation of the EpiCollect5 software. Around 78.5% of the study participants felt that the software was easy to install and use it. But then around 10.8% of the students disagreed that the EpiCollect5 software can be usable on multiple platforms. Almost 79.2% of the students felt that using the EpiCollect5 software is time saving and also it was

**Table 1: User-friendliness of EpiCollect5 software among the respondents (n=149)**

User friendliness	Strongly disagree n (%)	Disagree n (%)	Undecided n (%)	Agree n (%)	Strongly agree n (%)
It was easy and simple to use this software	2 (1.3)	1 (0.7)	6 (4)	96 (64.4)	44 (29.5)
It was user friendly	0	4 (2.7)	10 (6.7)	93 (62.4)	42 (28.2)
I can use it without written instructions	0	17 (11.4)	30(20.1)	84 (56.4)	18 (12.1)
I didn't notice any inconsistencies	1 (0.7)	13 (8.7)	21 (14.1)	100 (67.1)	14(9.4)
I learned to use it quickly	0	2 (1.3)	7 (4.7)	108 (72.5)	32 (21.5)
I easily remember how to use it	2 (1.3)	9 (6)	25 (16.8)	81 (54.4)	32 (21.5)

**Table 2: Applicability issues of the EpiCollect5 software (n=149)**

Applicability issues	Strongly disagree n (%)	Disagree n (%)	Undecided n (%)	Agree n (%)	Strongly agree n (%)
It helps me more effective and productive (compared to excel)	0	5 (3.4)	27 (18.1)	81 (54.4)	36 (24.2)
Misconception among public for using mobile for collecting data	6 (4)	30 (20.1)	51 (34.2)	50 (33.6)	12 (8.1)

**Table 3: Software related issues while using EpiCollect5 (n=149)**

Software related issues	Strongly disagree n (%)	Disagree n (%)	Undecided n (%)	Agree n (%)	Strongly agree n (%)
Ease of installation	3 (2)	7 (4.7)	22 (14.8)	78 (52.3)	39 (26.2)
Usable on multiple platforms	1 (0.7)	15 (10.1)	23 (15.4)	82 (55)	28 (18.8)
Time saving	0	10 (6.7)	20 (13.4)	74 (49.7)	45 (30.2)
Easy to view, analyze, and export data	1 (0.7)	14 (9.4)	16 (10.7)	88 (59.1)	30 (20.1)
Capturing location becomes ease using GPS	4 (2.7)	15 (10.1)	48 (32.2)	71 (47.7)	11 (7.4)
Easy to edit the questions	1 (0.7)	26 (17.4)	34 (22.8)	79 (53)	9 (6)
Network is a problem while uploading data	4 (2.7)	26 (17.4)	34 (22.8)	69 (46.3)	16 (10.7)

easy for the participants to view, analyze, and export data from the software. More than half of the participants (55.1%) were aware that capturing location using GPS becomes ease in EpiCollect5 software and they agreed on it. About 59% of the students felt that it was easy to edit the questions in EpiCollect5 software. Half of the medical graduates (57%) faced network issues while uploading data. The results of the same were depicted in Table 3.

## DISCUSSION

In the present study, almost 76.5% of the study participants agreed that they did not notice any inconsistencies while using the software. This result can be compared with the study done in Sweden on "Proposal of a Mobile Health Data Collection and Reporting System for the Developing World" by Shao in 2012 also reported that there is incomplete or incorrect data due to lack of understanding of the flow of health data which is subject to inconsistency and under-reporting of the health data to the management level. Participants of this study also suggested that involvement of more stakeholders for processing data and analyzing data will help to improve maximum utilization of data.<sup>[2,3]</sup>

"Offline mobile data capture module for Health and Demographic Surveillance System (HDSS) studies" has been surveyed by Baguiya among HDSS sites in Asia, Africa, and Oceania in the year 2016. The study reported that 60% of the study sites used paper-based data collection methods and 34% used mobile devices. In the study sites which used mobile devices for data collection, data managers were asked about the reason behind choosing this method. The responses were, they considered mobile devices for the process because that will guarantee both data quality and timeliness. Some of them also mentioned that they used mobile devices since the software for data collection was available free of cost and they had the skills to do the same. Similarly, in our study also, the medical undergraduates were asked about the applicability of using EpiCollect5 software for data collection for research purposes. More than two-third of the participants (78.6%) felt that this software helped them to be more effective and productive when compared to Microsoft Excel. They also felt that it is time saving and easy to view, analyze, and export data from the software.<sup>[4,5]</sup>

In our study, when we explored the software related issues, half of the study participants (57%) stated that they faced network issues while uploading data. A study done by Baguiya also showed the similar results that lack of skills for

setup and maintenance of the system and unreliable internet connectivity were the reasons for not opting for mobile based data collection. Although we have so many advantages in using mobile phones for various purposes, constraints such as changes in data management plans, infrastructure, and equipment also exists at the same time. These facts act as barriers for the usage of mobile devices. Although we have so many advantages in using mobile phones for various purposes, constraints such as changes in data management plans, infrastructure, and equipment also exists at the same time. These facts act as barriers for the usage of mobile devices.<sup>[4,6,7]</sup>

Respondents of our study agreed that the software is simple and easy to use and the software is user friendly and also the students were able to use it without written instructions which is comparable with the study done by Al-Mahadeen on “Factors affecting the readiness of medical doctors and patients with chronic conditions toward the usage of smartphones in the Saudi Arabian healthcare sector” where the participants considered using smartphone and its applications for communication among them; they also reported that it has enhanced the willingness of the patients. Multiple factors such as trust, ease of use, perceived usefulness also plays a major role in the use of software applications in the health sector.<sup>[8]</sup>

Capturing location becomes ease using GPS while using the EpiCollect5 software for data collection and other research purposes and majority of the participants had agreed on this fact in the present study. The results of our study were comparable to a study done by Madder *et al.* which suggests that the power of EpiCollect5 is its real-time and online mapping facility. The stakeholders and the data managers will be able to access, analyze and import the data from the project website, once it is synchronized. This feature will be more pronounced and helps in disseminating information and while planning for rapid intervention in case of emerging diseases.<sup>[7]</sup>

Besides the advantages of using software for data collection and research purposes, the study also captures the hidden facts such as applicability issues and other constraints from the user’s perspectives. It is important to incorporate the observations from this study for further enhancements in the software and also to integrate these methods in medical education, public health administration, and research.

## CONCLUSION

The current study highlights the importance of utilizing EpiCollect5 software among undergraduate medical students for community postings. Majority of the students agreed with the user-friendly nature of the software and its applicability

in collecting data from the community. Only a smaller proportion of students had software related issues which could be improved by adequate training for installation and data collection process.

## Recommendation

As technological tools become further integrated into medical research with young people, the academic community needs to think carefully about how digital technologies are conceived, designed, applied and analyzed ethically and appropriately. We advocate for meaningful, ethical, participatory interactions with young participants, where young people are co-designers, co-analyzers, and co-disseminators in the use of app-based data this gives opportunities for in-depth, multi-method research into young lives and provides opportunity for wider societal impact.

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