

Paper Analysis

PPDAC investigative cycle

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I. INTRODUCTION

Our main task was to analyze the paper [1] using the PPDAC investigate cycle. For each step and substep, we listed what the authors explicitly or implicitly did, identified potential sources of error and critiqued their choices.

II. PROBLEM

Practical problem which authors of the paper were trying to solve was mobile phone addiction behavior analysis and analysis of awareness on electromagnetic radiations (EMR) among a sample of Malaysian population. First we need to determine the unit and target population. In our case, unit is a person and target population are Malaysian adults, who use mobile phone. In the paper, we did not find any generalization or any statement that generalizes the findings to the non-Malaysian population.

Response variables in our case are addiction behavior and awareness on EMR, as this is the primary interest of the study. Explanatory variables are the following: demographic details (sex, age group, academic qualification, occupation, accommodation, health issues), time of a study, medical background and the number and type of mobile phones they have.

Population attribute is the prevalence of phone addiction and prevalence of awareness on electromagnetic radiation.

Statistical nature of the study is descriptive, as authors are interested in estimating the properties of the population. Due to some claims in the paper, it could be argued that the research is also predictive (suggesting that prolonged exposure to EMR may cause pain on wrist and hand, etc.)

III. PLAN

A study unit is a person and study population are Malaysian adult users of phone between December 2015 and 2016, who were willing to participate in the study. There is a study error since a study population is only a subset of the target population. They could include children/elderly and people from other countries too. Some candidates may not participate, as they may be too addicted of mobile phones (afraid that they would judge them). Also, participants were just friends and friend of a friend of an author.

Response variates that authors measured are duration of mobile usage per day, frequency of mobile phone checking (times), checking mobile phone in-between sleep, etc. Basically some mobile phone use habits, behaviors related to phone use and awareness of potential medical issues related to EMR. The proxy error is obvious, as we can not measure addiction, but only 'symptoms' of addiction. The authors could better describe how they determined the level of addiction, or cite a source that clearly shows the process of determining it.

Explanatory variates are demographic details, medical background and the number and type of mobile phones they have. All those variates are measured through online questionnaire. Measurement error is introduced, as some may misinterpret a question or even lie - many people underreport embarrassing behavior and thoughts on surveys. They want to look good,

even though most surveys are anonymous - it is called social desirability bias [2].

Sampling protocol was such that 450 participants were informed about the study through personal communications to fill the online survey form (between December 2015 and 2016). This protocol contains a sampling error. Sampling may be biased, as participants were invited through personal communications - most of participants belong to 21-25 age group. Sample could be more representative.

The authors do not discuss their data collection protocol in details. A few words about data collection and quality control should have been provided.

IV. DATA

Authors monitored data by excluding incomplete forms. There were no mentions about data examination, nor about storing the data for further use. They only mention that participants' details were maintained confidentially.

V. ANALYSIS

The authors computed frequencies and did some analysis using two-sided Chi-square test with Yate's continuity correction. They should provide more information, what a significant change is.

VI. CONCLUSIONS

The authors concluded that the study participants were aware about mobile phone/radiation hazards and many of them developed dependent behavior with smartphone. They mention that there is no significant change on mobile phone dependency behavior between participants having accommodation in house and hostel, but the claim is not confirmed by any result. Also, they suggest that smartphone usage may lead to further physiological and physiological complications, but it is not known what complications they mean, nor was this in the analysis. They also mention limitations, but do not mention any potential source of error.

REFERENCES

- [1] S. Parasuraman, A. T. Sam, S. W. K. Yee, B. L. C. Chuon, and L. Y. Ren, "Smartphone usage and increased risk of mobile phone addiction: A concurrent study," *International journal of pharmaceutical investigation*, vol. 7, no. 3, pp. 125–131, 2017, 29184824[pmid]. [Online]. Available: <https://pubmed.ncbi.nlm.nih.gov/29184824>
- [2] T. R. Graeff, "Response bias," in *Encyclopedia of Social Measurement*, K. Kempf-Leonard, Ed. New York: Elsevier, 2005, pp. 411–418. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/B0123693985000372>