

# Portable pad or pen and paper? Preference of mothers completing an outcomes instrument: a cross-sectional survey

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## ABSTRACT

**Background:** The objective of this study was to investigate the preferred method of data collection, paper or electronic, for mothers completing a validated infant outcomes instrument, the United Kingdom Infant Questionnaire. **Methods:** Mothers of children aged 0-12 months were asked to complete the questionnaire in both paper and electronic formats. The mother was then given another form to select her preferred type of survey. **Results:** In all, 51 mothers participated; 35 (69%) preferred the electronic questionnaire, 11 (21%) preferred the paper version and 5 (10%) felt neither one was better. Comments included that electronic form was easier and it was better to save the trees. **Conclusion:** Although the number was small, this study showed that electronic-based questionnaires were preferred by mothers of infants. With the progression of technology, electronic questionnaires could be considered a more efficient method for collecting important data, without loss due to patient or parent preferences.

## Introduction

Within the medical profession, the earliest found written records of a patient's history, prescription and depiction of diseases were from the fourteenth century by Greek medical doctors. However, in current age of informatics, it could be debated whether pen and paper are still the best tools to be used when portable computers, electronic storage devices and the internet are making their way into every aspect of our life.

Paper records may be slowing down progress. For example, Tim Kelsey, NHS England's national director for patient and information in 2015, said, "every day, care is held up and patients are kept waiting while an army of people transport and store huge quantities of paper around the healthcare system" stating an obvious waste of both natural and human resources.<sup>1</sup> There are many issues with paper-based records, time consumption, handwriting, redundant data keeping or data stored at different locations.<sup>1,2</sup> In 2015, the NHS spent an estimate of £125-250 million (\$162-325 million) for paper storage.<sup>3</sup> Chiropractors based in Canada researched the feasibility of online software to collect information from their patient and 80% showed a preference for the online option.<sup>4</sup>

Complete transition from pen and paper to an electronic substitute in the healthcare scene would be a big leap for progress resulting in not only lesser consumption of non-renewable resources, but a more effective relay of information.<sup>7</sup> No studies have been done to compare paper or electronic preference on the specific population of parents

reporting outcomes for their infant's care. Starting with newborns would be a major step toward electronic informatization, given that data collected over the course of an individual's entire life might be more beneficial in the long term.

## Methods

This study was conducted in a chiropractic teaching clinic, located on the south coast of England. All infants between the age of 0 to 12 months who presented to the clinic between January 2017 and April 2017 were eligible for inclusion. The English-speaking mothers were asked to complete both a paper version and an electronic format of the same United Kingdom Infant Questionnaire (UKIQ) either at the intake or discharge. No other exclusion criteria were used.

The UKIQ is a validated questionnaire used by the teaching clinic for infants aged between 0 to 12 months. The questionnaire was used to monitor infant's progress over the course of treatment. The intake UKIQ is given to every infant's mother at presentation to the clinic. The follow-up form was given at the 4th visit or discharge of the patient, whichever came first. The collection of data was procured either at infant's intake or discharge. All questionnaires were handed out and completed in the presence of our research members exclusively to ensure all potential enquiries by the mothers were clarified. Verbal permission from the mothers was acquired prior to administering both questionnaires. The paper questionnaire was handed in followed by electronic questionnaire on a tablet specifically dedicated for this study. All mothers who enter the clinic

signed a form that agreed for their infant’s anonymous data be used for research purposes. This study was approved by the AECC ethics research subcommittee.

Mothers were asked to answer all the questions. As for the electronic questionnaire, all questions had to be answered before the form could be submitted. The preference of each mother towards paper or electronic questionnaires was noted following their completion of both questionnaires in a paper survey. Additionally, mothers were given an opportunity to comment regarding the reason for their chosen preference. They could also make a comment to the research staff, if they chose.

The responses were collected and combined by the research team. Data from this study were analysed using descriptive statistics in Excel. The results were tabulated into percentage for comparison and collected comments were collated.

**Results**

In total, 51 mothers participated in this study. Overall, 69% of the mothers preferred the electronic forms over the paper version. Five participants were neutral on both data collection methods, eleven mothers were supportive of the paper version and the others displayed the complete opposite in favour of the electronic format. Some mothers also added comments.

Questionnaire preference	Total (n= 51)
Electronic form	35 (69%)
Paper form	11 (21%)
Neither	5 (10%)

**Table 1. Mothers’ preference of paper versus electronic form.**

Why electronic form preferred?	Why paper form preferred?
Fast and fluent with electronic devices	The tablet is heavy with fonts that are too small and the possibility of accidentally changing the answers/options while fiddling with the touch screen interface.
Lesser use of paper	Input of any information on a paper format is possible without the limitation of options provided by the electronic format.

**Table 2. Mothers’ comments on preference towards outcome instruments.**

**Discussion**

This was a study of whether mothers presenting their infant to a chiropractic clinic preferred to complete an outcome instrument on paper or with a portable tablet. Most mothers in our study preferred the electronic questionnaire. This

finding was corroborated by a Canadian study of 45 patients who were given options of questionnaires in either paper or electronic format and showed preferences for the software version.<sup>4</sup>

However, in contrast, a Dutch research group worked with 136 breast cancer patients within a hospital setting and had them fill in questionnaires in either paper or electronic format. Two-thirds of their patients chose to fill out the paper version while just over a third preferred the electronic option. The patients who chose the electronic questionnaire were reportedly much younger and higher educated than the rest of the population.<sup>5</sup> It is likely that a population of young mothers presenting to chiropractors may well be similar to the population that preferred the electronic survey.

Another Dutch study consisting of 277 female childhood cancer survivors from around the nation were randomized into two groups and sent invitations to participate by paper and electronic means. The paper-based group were also given the option to switch to electronic format through the invitation sent to them. The gathered data showed no differences in filling the questionnaires between both groups but also showed more respondent filling the paper-based questionnaire rather than the electronic format.<sup>6</sup>

Kania-Richmond et al, studied the use of online software for questionnaire administration and recorded that the patients found the electronic system better.<sup>4</sup> They reported lower error rate with better attention to the patient’s privacy and ease to fill in the forms in their own free time. From the patient’s perspective, an important factor impacting the accuracy of information provided was linked to the restricted fields in the questionnaires and inability to customise their answers. It is important to note that a study in Scandinavia compared the response rates from four different modes of data collection. Their result showed no loss of data regardless of the method.<sup>8</sup> Accuracy of data is the most important factor in any process of data collection.

**Limitations**

There are, of course, limitations to this study. The participant group for this study was small and limited to a specific region in England. Potential participants may have been missed during their first visit when no research members were available to conduct the survey or when the tablets were occupied/unavailable. There also could be circumstances whereby the mother would refuse to complete both questionnaires due to a multitude of factors: infant being unsettled, too lengthy a questionnaire to do twice or the lack of time.

While results showed 69% of preference towards the elec-

tronic format, it should also be noted that there would be a number of confounding factors to be accounted for:

1. Bias of the individual administering the study.
2. The order in which the paper or electronic questionnaires were given to the mother.
3. Financial class of our patient
4. Discrepancy within the data collection team in keeping the protocol exact

Advances in technology leap forward on a daily basis, the healthcare system around the world is bound to scrap out paper and pen for portable electronic devices in an attempt of saving both the environment and monetary resources. More research should be done in respect to not only the administration of the questionnaire, to investigate the change in behavior, cognitive and pattern recognition aspect but

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also to look deeper into what it entails to apply this to a large-scale system such as the NHS. Safe storage of the electronic data would be of prime importance with maybe the use of governmental/military software protections and trying to better manage the classification/traceability of the documents themselves.

#### Conclusion

In this study, mothers who presented their infant to a chiropractic teaching clinic showed an inclination toward electronic-based questionnaires as easier and faster to complete. It is not surprising that a young adult population has ease in manipulating an electronic device and prefers it to paper. Additional research should be carried out to confirm our assumption with consideration of other factors such as geographical location, intellectual level and financial status of the patient population.

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