



## Trialling computer touch-screen technology to assess psychological distress in patients with gynaecological cancer

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### RESEARCH

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### Abstract

#### Background

Cancer impacts on the psychological well-being of many cancer patients. Appropriate tools can be used to assist health professionals in identifying patient needs and psychological distress. Recent research suggests that touch-screen technology can be used to administer surveys. The aim of this study was to evaluate the use of a touch-screen system in comparison to written questionnaires in a large tertiary hospital in Western Australia (WA).

#### Method

Patients who were scheduled to commence treatment for gynaecological cancer participated in this study. Patients were assigned to complete either a written questionnaire or the same survey using the touch-screen technology. Both survey methods contained the same scales. All participants were asked to complete a follow-up patient satisfaction survey. Semi-structured interviews were conducted with health professionals to elicit views about the implementation of the technology and the available referral pathways. Data were analysed using descriptive statistics and content analysis.

#### Results

Thirty patients completed the touch-screen questionnaires and an equal number completed the survey on paper. Participants who used the touch-screen technology were

not significantly more satisfied than other participants. Four themes were noted in the interviews with health professionals: usability of technology, patients' acceptance of technology, advantages of psychological screening and the value of the instruments included.

#### Conclusion

Although previous studies report that computerised assessments are a feasible option for assessing cancer patients' needs, the data collected in this study demonstrates that the technology was not reliable with significant practical problems. The technology did not serve patients better than pen and paper.

#### Key Words

Gynaecological cancer, touch-screen technology, psychological distress

#### Background

The impact of cancer on the psychosocial wellbeing of patients is significant. It is estimated that 20%-66% of patients with cancer suffer from long-term psychological distress<sup>1</sup>. Previous research demonstrates that patients living with cancer experience high levels of anxiety, depression and unmet need<sup>2</sup>. One study reported that as many as 23% of participating cancer patients were suffering from anxiety disorders<sup>3</sup>. A second study reported that depression has been estimated to be as high as 50% amongst cancer sufferers<sup>4</sup>. Many cancer patients also experience high levels of unmet needs across a range of domains including information needs, physical, social and psychological needs<sup>5</sup>.

Many patients' psychosocial needs go undetected and/or are not addressed during cancer treatment. Psychological distress is often under recognised by health professionals in oncology<sup>6</sup>. A possible reason may be that practitioners in oncology clinics do not have time to screen for psychological issues. Similarly a patient may not feel able to communicate these issues in the circumstances of a busy clinic.

If untreated these issues may have an adverse impact on patient's quality of life<sup>7</sup>, compliance with medical care<sup>8</sup>, patient's capacity to participate in decision-making about



treatment<sup>9</sup> and may continue to have an emotional impact on some people long after their initial diagnosis<sup>10</sup>.

Several studies have reported that computerised assessments are a feasible option for assessing or reporting on cancer patients<sup>11-15</sup>. Larsson reported that patients preferred completing questionnaires on touch-screen computers because they took less time to complete and were easier to complete than written questionnaires<sup>15</sup>.

The Centre for Health Research, University of Newcastle, New South Wales, developed a touch-screen solution which provides real-time feedback of patients' responses to oncologists for appropriate intervention<sup>2, 16-17</sup>. This technology allows patients to complete a questionnaire regarding psychosocial issues such as anxiety, depression, supportive care needs, quality of life and distress, on a touch-screen kiosk prior to a clinic appointment. A study of the effectiveness of giving oncologists immediate feedback revealed that summary feedback of patient assessments to oncologists had some impact on patients' symptom control; however, only three out of 25 participants reported that their oncologist discussed the report with them<sup>17</sup>. This study reported that the collection of data about cancer patients' psychosocial wellbeing using computer technology is comparable to that collected by more traditional methods (pen and paper). Additionally the ability to rapidly assess this data is extremely valuable because it can assist in guiding patient care.

Although research has been conducted previously on the use of touch-screen technology for the assessment of psychosocial wellbeing, it has not been tested with a sample of gynaecological patients and the impact of the technology has previously not been tested in a clinical setting in Western Australia. We therefore conducted a pilot study to evaluate the use of a touch-screen system in comparison to written questionnaires in a large tertiary hospital. We also assessed the impact of the technology on the organisation. This brief report summarises the main results.

## Method

Ethics approval was gained from Curtin University of Technology and the teaching hospital hosting the study.

### Procedure

Patients who were scheduled to commence chemotherapy at the tertiary hospital for gynaecological cancer were invited to participate in this trial. Patients were randomly assigned to complete either the touch-screen questionnaire or a written questionnaire. Patients were provided with instructions about completing the written questionnaire or using the touch-screen computer. Written questionnaires were completed in the waiting room and the touch-screen questionnaires were completed in an office. The computer was visible to people walking past the office and space within the room was limited. The Cancer Nurse Coordinator reviewed participants' responses and was responsible for

providing the patients with any support when completing the questionnaire. Having assessed participant's responses she then relayed participant's responses to the responsible clinician for advice and/or appropriate management.

All patients in the study were asked to complete a follow-up patient satisfaction survey one week after they complete the psychological questionnaires.

### Instruments

Both the written questionnaire and the touch-screen questionnaire consisted of the following scales: The Distress Thermometer, The Hospital Anxiety and Depression Scale, The Supportive Care Needs Scale and the EORTC Quality of Life Scale (QLQ-C30) (23-26). The intervention group were required to complete the same questionnaire using a touch-screen computer.

The follow-up questionnaire surveyed participants on whether they were able to complete the questionnaire, what aspects of the questionnaire were challenging, whether they required assistance to complete the survey and satisfaction with the method that for administering the questionnaire.

### Equipment

A touch-screen computer was used for the electronic data recording. All data was stored off-site. Technical support was provided remotely. Once data was entered into the system a print out of the results was provided to the patients and health professionals.

### Follow-up interviews with health professionals

Semi-structured interviews were conducted with health professionals to elicit views about the implementation of the technology and referral pathways. These interviews focused on whether the intervention was considered to be worthwhile, whether the feedback reports were used and in what way, and the impact of the technology on the oncology consultation and the clinical setting.

### Data analysis

For the purpose of this brief report, data from the follow-up surveys were analysed using frequencies and descriptive statistics.

Qualitative data collected from the patient surveys and interviews with health professionals was analysed using content analysis.

## Results

Thirty patients participated in using the touch-screen questionnaires and 30 participated by completing the written questionnaire. The mean age of participants was 56.7 (Standard Deviation = 12.7, Min = 20, Max = 82).



Patients with the following gynaecological cancers were included: ovarian (n=26), cervical (n=21), endometrial (n=7), uterine (n=5) and other (n=1).

Although patients were initially randomly assigned to receive either the touch-screen or written questionnaires equipment failure prevented patients from completing the touch-screen questionnaire on several occasions. When this occurred patients were reallocated to the written questionnaire.

#### *Follow-up Questionnaires*

Forty-nine participants completed the follow-up questionnaires (touch-screen n=23, written n=26). Table 1 summarises participants' responses about completing either the touch-screen or written questionnaires.

Table 2 provides a summary of participants' satisfaction levels. It was apparent that participants using the touch-screen were not significantly more satisfied than participants who were offered a written survey.

Table 3 demonstrates participants' opinions about using touch-screen or written questionnaires in the future.

There were three main recommendations made by patients who completed the questionnaire using the touch-screen computer:

1. Having the computer in a private location without the screen being visible
2. Space around the computer and comfortable chairs
3. Ease of use and making sure that the touch-screen facility works without the need for technical assistance.

Patients who completed the written questionnaire reported that the following improvements would assist them in completing the questionnaires:

1. Questionnaire sent to their home to complete prior to appointment
2. Privacy to complete the questionnaire.

#### *Interviews with Health Professionals*

Four health professionals were interviewed about their perspectives on computer technology as a tool to assess patients' needs. The following themes arose: usability of technology, patients' acceptance of technology, advantages of psychological screening and instruments included. This section provides a summary of these themes.

#### *Usability of the Technology*

Health professionals experienced difficulties with the reliability of the technology. Issues that arose included ADSL link failing, printing issues, adverse weather conditions resulting in the need to disconnect machines and lack of local IT support.

#### *Patients' Acceptance of Technology*

The patients' acceptance of the technology was dependent on whether they had used computers before and whether they felt comfortable with the technology. Health professionals highlighted the importance of the technology working successfully as soon as the patient started to use it.

#### *Advantages of Psychological Screening*

Health professionals acknowledged the benefits of psychological screening and referral pathways. They highlighted that the questionnaires served to highlight issues that may need to be addressed at some point in the consultation.

#### *Questionnaires included*

Health professionals found that the distress thermometer was the most useful instrument because the results were relatively easy to interpret.

The written questionnaire was found to be more useful in assessing the patients because the health professionals had access to all of the patient information. In comparison, the printout from the touch-screen computer only summarised participants' responses.

### **Discussion and Conclusion**

This brief report provides a summary of a pilot study comparing the use of touch-screen questionnaires to written questionnaires. Although previous studies report that computerised assessments are a feasible option for assessing cancer patients' needs<sup>11-13</sup>, the data from this study suggests that the technology was not user friendly and health professionals and patients found it difficult to use efficiently. While this technology may not be appropriate for some populations, other populations who are more computer literate might benefit more. At this stage the health professionals involved in this study have opted to suspend the use of touch-screen technology to assist in the routine assessment of psychological needs.

The technology may be improved if health professionals who are going to be assessing patients' needs can have input into design of the survey tools. This study also demonstrates the importance of having local technical support and local data recording and back up. The other challenge highlighted was the potential cost of screen technology in practice.

Although the technology used in this study had its pitfalls, this study also highlighted the need for routine psychological screening. One outcome is the ongoing push for routine psychological screening for all cancer patients. Researchers in WA are currently developing and conducting several research projects which involve screening patients



for psychological distress (using the distress thermometer) at different time points during their cancer journey. Questionnaires are being deployed at numerous sites. A referral pathway is also being developed to assist health professionals to address the needs of those with significant levels of distress.

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## PEER REVIEW

Not commissioned. Externally peer reviewed.

## CONFLICTS OF INTEREST

The authors declare that they have no competing interests.



### Tables

**Table 1: Comparison of patients’ responses in relation to completing questionnaires using touch-screen or pen and paper**

|  | Touch-screen |    | Written |    |
|--|--------------|----|---------|----|
|  | Yes          | No | Yes     | No |
| Were you able to complete all of the questions in the questionnaire?   | 23           | 0  | 23      | 2  |
| Did you find any of the questions difficult to complete?   | 5            | 18 | 3       | 22 |
| Did you require assistance in order to answer any of the questions?  | 4            | 19 | 0       | 24 |
| Did you find that you struggled with the process of answering the questions at any point?  | 7            | 16 | 2       | 24 |
| Did you find the surrounding noise impacted on your ability to complete the questionnaire?   | 2            | 21 | 1       | 25 |
| Did you feel you had enough privacy while completing the questionnaire?  | 2            | 21 | 2       | 24 |
| Did you feel comfortable in the surrounding environment to complete the questionnaire?   | 1            | 22 | 3       | 23 |
| Did the completion of the questionnaire assist with discussion of these sorts of issues with your oncologist?  | 6            | 16 | 9       | 17 |
| Did the completion of the questionnaire impact on the outcome of your appointment with your oncologist (e.g. were you referred for additional support) | 3            | 19 | 4       | 22 |

**Table 2: Participants level of satisfaction with touch-screen and written questionnaires**

| How satisfied were you with the method that was used to provide the questionnaire to you? | Very satisfied | satisfied | Neither Satisfied/ nor dissatisfied | Dissatisfied | Very dissatisfied |
|---|----------------|-----------|-------------------------------------|--------------|-------------------|
| Touch-screen  | 7              | 14        | 1                                   | 1            | 0                 |
| Written   | 5              | 21        | 0                                   | 0            | 0                 |

**Table 3: Participants preferences for completing touch-screen or written questionnaires**

| Which method would you prefer for the questionnaire to be provided to you? | Via touch-screen | Via written form | Either |
|--|------------------|------------------|--------|
| Received touch-screen  | 16               | 4                | 2      |
| Received written questionnaire   | 1                | 23               | 0      |