Understanding Productivity and Technostress for Oncology Nurses Using an Electronic Health Record to Increase Safety, Quality, and Effectiveness of Care for Patients with Cancer

Elizabeth Wertz Evans, PhD, RN, CPHIMS, FHIMSS, CPHQ, FACMPE

Abstract

- Previous research → Medical errors and overall healthcare costs when EHRs are used.
- RNs are:
  - Pressured to use EHR
  - Suffer stress during process
  - Forced to adapt to challenges during software installation
  - Endure ongoing updates to hardware and software
  - Endure multiple changes in work flow, especially without participation
  - Not given opportunity to share feedback
- Experimental, quantitative research through Capella University (www.capella.edu)
- 228 nurses responded to invitation to participate
- Excluded nurses who:
  - Participated in the pilot (52)
  - Did not give consent (12)
  - Did not use an EHR (7)
  - Were not bedside/charlside nurse (42) → admin, researcher, educator
  - 3 in experimental group & completed continuing education
  - 112 nurses between 18 & 65 met criteria for control group
  - Completed survey
  - 103 nurses used after screening for accuracy, missing data, outliers, normality, linearity, and homoscedasticity → sample size OK per G*Power 3.1.2

Problem

PROBLEM: Oncology nurses may experience a decrease in their productivity related to the effects of technostress.
- Patients with cancer represent a growing population of individuals living with a chronic disease.
- These patients are seen by multiple members of the healthcare team in a variety of settings including the hospital, medical clinics, physician office practices, and independent centers.
- Lack of nursing access to medical information for patients with cancer has led to an increased risk for errors during treatment due to these patients’ complex medical conditions and involvement of multiple clinicians.
- The use of an EHR by oncology nurses has helped to exchange information throughout these potentially disparate environments, especially in the ambulatory treatment centers.
- However, the stress related to the transition from paper records to an EHR represents a barrier as nurses experience distress with a subsequent effect on their productivity.

Research Question

Which of the independent variables (i.e., technostress creators, technostress inhibitors, age, and level of nursing education) are significant in explaining productivity?

Survey

- Each nurse rated his/her reactions to statements about technology and productivity
  - Survey originally developed by Torkzadeh & Doll (1999)
  - Also used by Ragu-Nathan et al. (2008) and Tarafdar, et al. (2007)
  - Received permission from Tarafdar to use/modify the survey
  - Used Zarca® software to collect data → downloaded into IBM SPSS (v. 21)

Technostress

- Definition: "Modern disease of adaptation caused by an inability to cope with new computer technologies in a healthy manner" (Brod, as cited in Ragunathan, et al., 2008, p. 418)
- Creators (lead to an increase in stress):
  - Overload
  - Complexity
  - Insecurity
  - Uncertainty about technology
- Inhibitors (lead to a decrease in stress):
  - Literacy facilitation
  - Technical support provision
  - Involvement facilitation
  - Innovation support

Demographics

Demographic | Data Revealed
--- | ---
Age | 9.8% - 20 to 30
| 12.5% - 31 to 40
| 31.3% - 41 to 50
| 39.3% - 51 to 60
| 7.1% - 61 and older
Nursing Education | 30.3% - Diploma or Associate’s Degree
| 50.9% - BSN
| 18.8% - MSN
Years of Practice as a Nurse | 48% - More than 20 years
| 25% - Over 30 years
Organization | 8.9% - Rural
| 42.9% - Suburban
| 48.2% - Urban
Organizational Use of EHR | 55% - All electronic; no paper
| 56% - Some electronic; some paper
| 0.5% - All but chart orders
Total Time Using an EHR in All Nursing Jobs | 10.7% - Less than 1 year
| 27.7% - 1 to 3 years
| 24.1% - 4 to 5 years
| 21.4% - 6 to 10 years
| 16.1% - Over 10 years

Conceplual Framework

IV: Technostress Creators

IV: Highest Level of Nursing Educ.

DV: Nurse’s perceived productivity

IV: Technostress Inhibitors

IV: Age of Nurse

Results

- Omnibus Null Hypothesis: R-squared is equal to 0. Nurse’s age, highest level of nursing education, and perceptions of technostress would not predict perceived productivity.
- F6 = 387 → Rejected null hypothesis
- Hypothesized that model would explain variance in perceived productivity
- There was a linear relationship & predictability between the dependent variable (DV) & 2 independent variables (IVs):
  - As technostress & productivity
- Consistent with previous research (Ragu-Nathan, et al., 2008, and Tarafdar, et al., 2007 & 2010)
- Technostress creators and inhibitors explained 38.7% of the nurse’s perceived productivity → hypothesis supported

Implications

- Age & highest level of nursing education → no effect on productivity
- In previous research, age had an effect (Tu et al., 2005); no nurses in study

References


For More Info

Elizabeth (Liz) Wertz Evans, PhD, RN, Executive Director, Oncology Nursing Society
E-mail: evans@ons.org
Phone: 412-859-6392
This PowerPoint 2007 template produces a 48”x72” presentation poster. You can use it to create your research poster and save valuable time placing titles, subtitles, text, and graphics.

We provide a series of online answer your poster production questions. To view our template tutorials, go online to PosterPresentations.com and click on HELP DESK.

When you are ready to print your poster, go online to PosterPresentations.com

Need assistance? Call us at 1.510.649.3001

**QUICK START**

Zoom in and out

As you work on your poster zoom in and out to the level that is more comfortable to you. Go to VIEW > ZOOM.

Title, Authors, and Affiliations

Start designing your poster by adding the title, the names of the authors, and the affiliated institutions. You can type or paste text into the provided boxes. The template will automatically adjust the size of your text to fit the title box. You can manually override this feature and change the size of your text.

**TIP:**

The font size of your title should be bigger than your name(s) and institution name(s).

Adding Logos / Seals

Most often, logos are added on each side of the title. You can insert a logo by dragging and dropping it from your desktop, copy and paste or by going to INSERT > PICTURES. Logos taken from web sites are likely to be low quality when printed. Zoom it at 100% to see what the logo will look like on the final poster and make any necessary adjustments.

**TIP:**

See if your company's logo is available on our free poster templates page.

Photographs / Graphics

You can add images by dragging and dropping from your desktop, copy and paste, or by going to INSERT > PICTURES. Resize images proportionally by holding down the SHIFT key and dragging one of the corner handles. For a professional-looking poster, do not distort your images by enlarging them disproportionally.

**Image Quality Check**

Zoom in and look at your images at 100% magnification. If they look good they will print well.

**ORIGINAL**

**DISTORTED**

Corner	
  
  handles

Good	
  
  printing	
  
  quality

Bad	
  
  printing	
  
  quality

QUICK START (cont.)

How to change the template color theme

You can easily change the color theme of your poster by going to the DESIGN menu, click on COLORS, and choose the color theme of your choice. You can also create your own color theme.

You can also manually change the color of your background by going to VIEW > SLIDE MASTER. After you finish working on the master be sure to go to VIEW > NORMAL to continue working on your poster.

How to add Text

The template comes with a number of pre-formatted placeholders for headers and text blocks. You can add more blocks by copying and pasting the existing ones or by adding a text box from the HOME menu.

Text size

Adjust the size of your text based on how much content you have to present. The default template text offers a good starting point. Follow the conference requirements.

How to add Tables

To add a table from scratch go to the INSERT menu and click on TABLE. A drop-down box will help you select rows and columns.

You can also copy and paste a table from Word or another PowerPoint document. A pasted table may need to be re-formatted by RIGHT-CLICK > FORMAT SHAPE, TEXT BOX, Margins.

Graphs / Charts

You can simply copy and paste charts and graphs from Excel or Word. Some reformatting may be required depending on how the original document has been created.

How to change the column configuration

RIGHT-CLICK on the poster background and select LAYOUT to see the column options available for this template. The poster columns can also be customized on the Master. VIEW > MASTER.

How to remove the info bars

If you are working in PowerPoint for Windows and have finished your poster, save as PDF and the bars will not be included. You can also delete them by going to VIEW > MASTER. On the Mac adjust the Page-Setup to match the Page-Setup in PowerPoint before you create a PDF. You can also delete them from the Slide Master.

Save your work

Save your template as a PowerPoint document. For printing, save as PowerPoint of “Print-quality” PDF.

Student discounts are available on our Facebook page. Go to PosterPresentations.com and click on the FB icon.

© Elizabeth Wertz Evans, 2014