Development of a Web-Based Mobile Technology Application for Healthcare Providers in Transplant Care

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Overview

- Mobile cloud based hybrid applications in improving health outcomes
- Best practices mobile medical applications
- Use of Web-based mobile applications to reduce healthcare inefficiency
Acknowledgements

- Grant-North American Transplant Coordinators Association
- Grant-UA Huntsville-JFDR
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- Research Team:
  - Susan Alexander, DNP
  - Karen Frith PhD
  - Manil Manskey, MS –IT Dept
Mobile App

Transplant Nursing

- Kidney Transplant
  - Kidney transplantation in HIV infected patients.
  - Detection of autosomal dominant polycystic kidney disease by NMR spectroscopic
  - Continuous cognitive improvement 1 year following successful kidney transplant.
  - Utilization of Small Pediatric Donor Kidneys: A Decision Analysis.
  - Validating Prediction Models of Kidney Transplant Outcome Using Single Center Data.
  - −174G/C interleukin-6 gene polymorphism and the risk of transplanted kidney failure or graft
  - Kidney Function: Glomerular Filtration Rate Measurement with MR Renography in Patients
Where did that come from?

- Clinical experience
- Education
- Opportunity
- Networking
Initial research

- Dissertation

- NATCO- Survey/pre-post—surprisingly statistically significant
Transplant Elective Curriculum

Sample Objectives:

- Discuss historical events and historical trends that impact on the status of the donation/transplantation process.
- Of the professional nurse in facilitating a successful organ tissue donation program.
- Discuss biophysical, psychological, socio-cultural, and developmental processes relevant to preoperative and postoperative nursing care of the transplant recipient and family.
- Discuss current research findings relevant to nursing care of the transplant recipient and family.
Survey-sample questions

- 4. I would like to work with organ transplant patients
  - Strongly agree
  - Agree
  - Neutral
  - Strongly Disagree
  - Disagree

- 5. I plan to consider being an organ donor
  - Strongly agree
  - Agree
  - Neutral
  - Strongly Disagree
  - Disagree
Results - Pre-test

I feel confident working with transplant patients

- Strongly agree
- Agree
- Neutral
- Strongly Disagree
- Disagree
Results- Post-Test

(p = 0.0045)
Results - Pre-test

I am an advocate for transplant among healthcare colleagues

- Strongly agree
- Agree
- Neutral
- Strongly Disagree
- Disagree
Results- Post-Test

(p = 0.0029)
Results

(p = 0.0029)
Survey Monkey

http://www.surveymonkey.com/MySurvey_Print.aspx?sm=oOMtVCjo8GCq9JBnw9N0L6PW70LsvRiyDXH5FGUVKRI%3d
Next Step

- Parallel
  - Instrument Development
    - FGCU
    - VUMC
  - Mobile Web based application
Instrument Development

- **Factor loadings for Maximum Likelihood Factor Analysis for the 23-item TXP-RN**

  Items
  - **Factor 1**
    - I would like to work with organ transplant patients
      - 0.896
    - I would like to participate in transplant research
      - 0.785
  - **Factor 2**
    - I know how to contact procurement services if organ donation is requested
      - 0.001
      - 0.793
    - I feel comfortable with the paperwork necessary for organ donation
      - 0.046
      - 0.849
Exploratory factor analysis was undertaken with factor loadings >0.7 determined to be:

- Desire to work in transplantation
- Confidence in transplantation advocacy
- Organ donation advocacy
- Procurement 0.6- to be developed
Revised instrument

- An alpha value of greater than 0.7 is generally considered acceptable internal consistency (Nunnally & Bernstein, 1994; Elliott, 2003).

- Alpha = 0.94
URII

- UAHuntsville Research Infrastructure Investment Grant
  - Mobile Application
  - Web Based Technology for Transplant Nurses
  - Survey will be administered on the site
Web based portal

- In collaboration with Manil Maskey, Dr. Susan Alexander, and Helen Conover, a prototype of the web-based portal has been developed (http://tppdev.uah.edu/).
Mobile cloud based hybrid applications: improving health outcomes

- Cloud computing
  - marketing term
  - do not require end-user knowledge of the physical location and configuration of the system
  - a parallel to this concept can be drawn with the electricity grid, wherein end-users consume power without needing to understand the component devices or infrastructure required to provide the service.
Mobile cloud based hybrid applications: improving health outcomes
Best practices mobile medical applications

- Reach
- Compatibility
- Tech Support
- Constantly updated
- Include reliable, valid content
- ……..TBA
Use of Web-based mobile applications to reduce healthcare inefficiency

- Real patient care and clinical benefits
- Prevent medication errors
- Prevent communication errors
- Avoid Delays/Links
- ...........- the sky is the limit
So what?

- Importance of nursing research
- Teams
- Institutional strengths
- Next Step- HRSA--$300,000
Questions