WOMEN and STROKE KNOWLEDGE

Impact of Age, Residence Location, and Income on Stroke Knowledge
Worldwide Stroke Facts

- Worldwide stroke is the second leading cause of death and the leading cause of disability (WHO, 2004).
- 15 million people suffer stroke worldwide each year.
  - 5 million die and another 5 million are permanently disabled.
Stroke & the World’s Women

- Women experience over half of all strokes, 60% of stroke-related deaths, and a death rate of 11% versus 8.4% for men.
- Heart disease & stroke kill more women worldwide than cancer, HIV/AIDS, malaria, and TB combined.
GENERAL STROKE FACTS in USA

(Lloyd-Jones et al., 2010)

- 795,000 new or recurrent strokes in 2009
- On average someone has a stroke every 40 seconds
- Strokes account for 1 of every 18 deaths & ranks third in cause of all deaths
Stroke & Black Americans

- Blacks have twice the risk of first-ever stroke compared to whites
- Stroke occurrence in Americans 45-84 years:
  - 6.6 per 1000 in black males (3.6 in white)
  - 4.9 per 1000 in black females (2.3 in white)
NC STROKE FACTS
(North Carolina Center for Health Statistics, 2007)

• Stroke is 3rd leading cause of death in NC

• In 2006, stroke caused 4,551 deaths, 6.1% of all deaths that year

• Stroke is 5th leading cause of years lost life, ~ 22,335 years of life lost in 2005

• NC’s age-adjusted stroke death rate is the 5th highest among 50 states
NC STROKE FACTS
(North Carolina Center for Health Statistics, 2007)

• NC is part of the Stroke Belt & its eastern coastal counties are part of the “Buckle of the Stroke Belt" with the very highest stroke death rates in the nation for last 30 years.

—“Stroke Buckle” death rates among those 35 to 54 years of age are more than twice the rest of the nation
WOMEN & STROKE FACTS
(Lloyd-Jones et al., 2010)

- Each year ~ 55,000 more women than men experience a stroke
- Stroke is a major health issue for postmenopausal women
Women & Stroke Facts

- Women 45-54 years of age are more than twice as likely as men to have a stroke.
- 2006 stroke mortality for women was 86,993 (60.6% of all stroke deaths)
  - 41% white females
  - 57% for black females
## NC POPULATION STATISTICS
(North Carolina Rural Economic Development Center, 2007)

<table>
<thead>
<tr>
<th></th>
<th>Population (mil)</th>
<th>White</th>
<th>Black</th>
<th>% ≥ 45 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>4.44 (US 59 mil) (World 3.4 bil)</td>
<td>73.4%</td>
<td>20.7%</td>
<td>36.9%</td>
</tr>
<tr>
<td>Urban</td>
<td>4.41 (US 226 mil) (World 3.5 bil)</td>
<td>70.8%</td>
<td>22.5%</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>Median Income</td>
<td>Rural Poverty</td>
<td>Urban Poverty</td>
<td></td>
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<td>-------</td>
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<td></td>
</tr>
<tr>
<td>White</td>
<td>$42,530 (US $65,652)</td>
<td>9.8%</td>
<td>7.0%</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>$27,845 (US $40,259)</td>
<td>27%</td>
<td>19%</td>
<td></td>
</tr>
</tbody>
</table>
## NC COUNTIES in STUDY

(North Carolina Rural Economic Development Center, 2007)

<table>
<thead>
<tr>
<th></th>
<th>Pop.</th>
<th>White</th>
<th>Black</th>
<th>Median Income</th>
<th>Poverty Rate</th>
<th>Median Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Hanover County</td>
<td>182,591</td>
<td>79.9%</td>
<td>17.0%</td>
<td>$40,172</td>
<td>13.1%</td>
<td>36.3</td>
</tr>
<tr>
<td>Brunswick County</td>
<td>94,945</td>
<td>82.3%</td>
<td>14.4%</td>
<td>$35,888</td>
<td>12.6%</td>
<td>42.2</td>
</tr>
</tbody>
</table>
RESEARCH PURPOSE

• Identify the knowledge of stroke warning symptoms and risk factors in midlife women, and

• Secondarily, identify the impact of age, residence location, & income on stroke knowledge.
STROKE in LAST 10 YEARS

• Despite the fact that from 1995 to 2005 the stroke death rate fell 29.7%, and the actual number of stroke deaths declined 13.5%, stroke continues to be the third leading cause of death in the United States making stroke knowledge and recognition an important public health concern (Lloyd-Jones et al., 2009).
STROKE RECOGNITION

• Few published studies regarding stroke knowledge in urban or rural settings (Blades et al., 2005; Kothari et al., 1997; McDonald et al., 2009; Pancioli et al., 1998; Yoon et al., 2001)

• Many Americans still do not recognize the symptoms of a stroke, causing disabling or even fatal delays in receiving effective, time-sensitive treatment (Lloyd-Jones et al., 2009).
THE PUBLIC & STROKE

• Because stroke injures the brain, stroke victims may have an impaired ability to communicate or to recognize the symptoms they are experiencing as a stroke.

• The burden for quick, efficient action therefore, shifts to an alert bystander (e.g., family, friends, neighbors, coworkers) who must recognize symptoms associated with a stroke (National Institutes of Neurological Disorders and Stroke, 1999).
The decreased availability and accessibility of health care providers to the 25% of Americans (50.2% NC) who live in rural areas may impact both the dissemination of stroke information and the timely treatment of stroke (United States Department of Health and Human Services)
RURAL AREAS & STROKE

- Individuals living in rural areas are typically older and earn less than their non-rural counterparts, compounding the issues surrounding stroke recognition, detection, and treatment (Redford & Cook, 2001)
INCOME & STROKE

• Evidence is strong for increased incidence of stroke & stroke mortality in low socioeconomic groups (Cox et al., 2006)

• NHANES III secondary data analysis study indicates that income may explain the increased association between black ethnicity and stroke incidence (Bravata, et al., 2005)
RESEARCH DESIGN

• Descriptive, correlational study
• Non-experimental, quantitative design
• Used self-administered *Stroke Recognition Questionnaire (SRQ)*©
  – 20 symptom statement scale
  – 20 risk factor statement scale
• Each scale has ten true & ten distractor statements scored as one point each
STUDY SAMPLE

• Three cohorts of women participating in the BC/BS sponsored UNCW Weight-Wise Program (WWP) in 2008-2009 (n= 169)

• Convenience sample of 97 (57.4%) midlife women aged 41-71 years completed SRQ©

• Two NC Coastal Counties – Brunswick & New Hanover
STUDY DEMOGRAPHICS

• Race
  – White (n=75, 77.3%)
  – Black (n=20, 20.6%)
  – Hispanic (n=2, 2.1%)

• Residence Location
  – 58 (59.8%) rural
  – 39 (40.2%) urban

• Age
  – 40-49 years (27.8%)
  – 50-59 years (52.6%)
  – ≥60 years (19.6%)
STUDY DEMOGRAPHICS

• Income (n=96):
  – < $14,000 (n=9, 9.3%)
  – $14,001-$28,400 (n=26, 26.8%)
  – $28,401-$35,600 (n=11, 11.3%)
  – $36,601-$60,000 (n=25, 25.8%)
  – >$60,001 (n=25, 25.8%)

• Education: over 98% (96) completed high school or above
STROKE KNOWLEDGE SCORES

• **Symptom Scale**
  – Total Score (20)
    \[ M = 12.84 \]
  – Symptom Subscale (10)
    \[ M = 9.69 \]
  – Non-stroke (10)
    \[ M = 3.17 \]

• **Risk Factor Scale**
  – Total Score (20)
    \[ M = 9.49 \]
  – Risk Factor Subscale (10)
    \[ M = 7.56 \]
  – Non-stroke (10)
    \[ M = 2.00 \]
STROKE SYMPTOM KNOWLEDGE

- Majority of respondents (97.9%) had a score of 8 or above
- Respondents in urban settings scored $M = 9.76$ versus
  Respondents in rural settings scored $M = 9.64$  ($p = .477$)
STROKE SYMPTOM KNOWLEDGE

• Respondents age ($p = .544$)
  40-49 years ($M=9.8$)
  50-59 years ($M=9.6$)
  >60 years ($M=9.7$)

• Income ($p = .189$)
  <$22,200 ($M=9.6$)
  $22,201 - $35,600 ($M = 9.5$)
  >$35,601 ($M = 9.8$)
STROKE SYMPTOMS IDENTIFIED

- **Correctly**
  - Confusion (99%)
  - Weakness one side of body (99%)
  - Numbness of one side of body (99%)
  - Slurred or garbled speech (99%)

- **Incorrectly**
  - Extreme tiredness (56.7%)
  - Difficulty breathing (55.7%)
  - Sudden pain in one arm (51.5%)
  - Chest pain (44.3%)
  - Leg cramps (35.1%)
91.8% of respondents identified *Double Vision* (90% of 50-59 y/o)

89.7% of respondents identified *Sudden Severe Headache* (86% of 50-59 y/o)

Respondents with an income of $22,201-$35,600 were less likely to identify *Double Vision & Sudden Severe Headache*
Majority of respondents (71.9%) had a score of 7 or above.

Respondents in urban settings scored $M = 7.0$ versus respondents in rural settings scored $M = 7.4$ ($p = .433$)
STROKE RISK FACTOR KNOWLEDGE

• Respondents age
  \( p = 0.829 \)
  40-49 years \( M = 7.72 \)
  50-59 years \( M = 7.57 \)
  >60 years \( M = 6.47 \)

• Income (\( p = 0.386 \))
  < $22,200 \( M = 6.95 \)
  $22,202-$35,600 \( M = 4.32 \)
  > $35,601 \( M = 7.76 \)
STROKE RISK FACTORS IDENTIFIED

- Most frequently identified risk factors:
  - High blood pressure (96.9%)
  - More than 20 pounds overweight (88.7%)
  - History of neck vein disease (83.5%)

- Incorrectly identified risk factors:
  - Varicose veins (37.1%)
  - Hypoglycemia (34%)
  - Trouble sleeping (26.8%)
Stroke Risk Factor Knowledge

• Less than 80% of respondents identified diabetes, smoking, & lack of physical exercise as stroke risks

• Majority of respondents failed to identify alcohol use greater than 2 drinks/day (only 37.1%)

• Only 61.9% of respondents correctly identified irregular heartbeat
Conclusions

- Stroke symptom knowledge level better than published studies, while stroke risk factor knowledge is comparable or slightly less.
- Rural respondents higher stroke risk factor knowledge level than urban counterparts surprising
Conclusions

• Four (4) non-stroke symptoms misidentified:
  – extreme tiredness
  – difficulty breathing
  – sudden pain in one arm
  – chest pain

which are in fact symptoms reported by individuals experiencing an acute myocardial infarction.
Conclusions

• Focus of education may need to be on symptoms that are NOT associated with stroke as well as those that are.

• Educational interventions are needed which improve women’s recognition and rapid response to episodes of stroke symptoms.
SRQ© Reliability (KR20)

- Entire Questionnaire .75
- Entire Stroke Symptom Scale .81
  - Symptom Subscale .66
  - Non-Stroke Symptom Subscale .83
- Entire Stroke Risk Factor Scale .80
  - Risk Factor Subscale .73
  - Non-Stroke Risk Factor Subscale .77
Limitations of Study

- Sample small & homogenous – mostly white
- Participation in the WWP may have improved knowledge of stroke symptoms
- Use of “recognition” technique versus “recall” on questionnaire
- Inability to generalize results to other geographic regions
Implications for Nursing Practice

• Educational interventions are needed which improve women’s recognition of and rapid reaction to episodes of stroke symptoms.
• Stroke screening programs and education related to stroke prevention in the workplace.
• Identify “personal link” to motivate individuals to participate in stroke education.
Future Research

• Develop interventions that help women improve personal and familial stroke risk recognition and prevention

• Identify what health care providers know & do not know about stroke and its prevention and recognition
References


References


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