Using the Delphi Technique in Medical Education Research

Amy H Farkas, MD
MERMAID Series
October 14, 2016
Presidential Election
Round 1

Please take one minute to write down what percent of the popular vote you think Hillary Clinton will receive on November 8th.
Overview

• Delphi Technique
  – History of the technique
  – Delphi Theory
  – Conducting a Delphi
  – Strengths and Weaknesses
  – Medical Education Application

• Fellowship Project
Oracle of Delphi
History of the Delphi

• Developed by RAND early during the cold war primarily as a forecasting technique to address questions related to military preparedness

• In response to perceived weakness of other forecasting techniques such as focus groups
  – Loudest outranked the smartest
  – Pride
  – Location

• Debate “independent of personalities”
Successful Delphi Predictions
Theory

• Experts are more likely to be correct about a question related to their field than non-experts

• Collective opinion, particularly collective agreement, is more valid and reliable than individual opinion
Delphi Fundamentals

• Basic Elements
  – Panel of experts
  – Anonymous
  – Feedback

• Defining a Delphi
  – Multi-round anonymous survey that attempts to achieve consensus on a particular issue
Conducting a Delphi

1st – Identifying the Topic

2nd – Identifying the Experts

3rd – Creating your Questions

4th – Providing Feedback

5th – Defining Consensus
Identifying the Topic

• Questions that lack a statistical “true” answer

• Topics where there is a lack of consensus
  – Example: acceptable prescription of opiate therapy after an orthopedic procedure

• Topics that do not lend themselves to other techniques
  – Example: Because of location it is difficult to gather experts into a focus group
HELLO
I AM...
AN EXPERT
Starting Question

• Classically 1\textsuperscript{st} round is a qualitative question used to generate ideas
  – Example: When evaluating applicants to internal medicine residency what qualities do you most value?
• 2\textsuperscript{nd} round question would be informed by the first round
  – Example: Rank each quality from 1-10 based on how important it is for a applicant to residency to possess
• Can generate a burdensome amount of information
“Modified” Delphi

• Other methods of gathering an initial list of topics to be considered might include
  – Focus groups
  – Individual interviews
  – Review of the literature

• Benefit of this approach is that it can shorten the Delphi
Defining Consensus

• While it is important to consider definitions of consensus prior to beginning, may evolve through the process
• Often is defined by measures of central tendency or percentage levels of agreement
• There is no standard definition of consensus in the literature
Practical Considerations

• You need to be able to track who responded and how they responded

• You need to maintain participant interest
  – Quick turn around time
  – Lots of recruitment

• You may need to adjust the number of planned rounds depending on whether consensus has been achieved
Strengths

• Relatively easy methodology

• Can be a quick turn around

• Useful for topics that lack “true” answers
Weaknesses

• Expert opinion

• One point in time

• Inherently favors consensus

• Somewhat arbitrary
Examples in Medical Education


Improving the national board of medical examiners internal medicine subject exam for use in clerkship evaluations – J Gen Intern Med 2002
Examples in Medicine


Best practices for safe use of insulin pen devices in hospitals: recommendations from an expert panel Delphi consensus process – Am J Health Syst Pharm 2016

Round 2

Please take one minute to write down what percent of the popular vote you think Hillary Clinton will receive on November 8\textsuperscript{th} taking into consideration that in the first round the average percent popular vote for Hillary Clinton was X
Establishing Consensus on Residency Education in Women’s Health

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Melissa McNeil, MD, MPH
Overview

• Background
• Objective
• Methods
• Results
• Strengths and Limitations
• Conclusions
Background

• The Accreditation Council of Graduate Medical Education expects internal medicine residents to provide “gender-specific” care

• Literature suggests that internal medicine residents are ill-prepared to provide care to female patients

Background

• Current guidelines are vague and outdated
  – “common gynecological disorders”
  – “gender-related social and psychological issues”
  – “family planning and reproductive health”

• Almost half of all internal medicine program directors are unfamiliar with the ABIM core competencies

Objective

To develop consensus list of core topics and procedural skills in women’s health that every categorical internal medicine resident should possess upon graduation
Methods

• Method: two-round Delphi

• Participants: internal medicine women’s health experts
  – Internal medicine women’s health residency and women’s health fellowship directors
  – Members of the Society of General Internal Medicine Women’s Health Education Interest Group
  – National leaders in women’s health
First Round

• Participants were presented with a list of 54 topics in women’s health
  – Developed after a review of the literature
  – Vetted by local women’s health experts

<table>
<thead>
<tr>
<th>Clinical Domains</th>
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<tbody>
<tr>
<td>Cervical Cancer</td>
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<tr>
<td>Gynecological Complaints</td>
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<tr>
<td>Reproductive Health</td>
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<tr>
<td>Urological Complaints</td>
</tr>
<tr>
<td>Pregnancy</td>
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<tr>
<td>Endocrine</td>
</tr>
<tr>
<td>Breast Health</td>
</tr>
<tr>
<td>Psychological</td>
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<tr>
<td>Menopause</td>
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<tr>
<td>Other</td>
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</tbody>
</table>
First Round

Participants were asked three things

1) Rank the importance of each topic for providing high quality care to women, using a 1-5 Likert scale

2) Identify which topics are critical for women’s health education, with a yes/no response

3) Respond to a free response section to list any additional topic they felt was critical to women’s health education
First Round Analysis

• We calculated mean importance ratings and standard deviations for all topics
• We created a truncated list of 40 topics identified as “critical” by at least 50% of participants in the first round
• Based on the free response section two additional topics were added for round 2
  – Diagnosis of mental health disorders
  – Management of mental health disorders
Eliminated Topics

- Prescribing chemoprophylaxis for primary prevention of breast cancer
- Counseling regarding breast cancer treatment
- Management of IPV
- Co-management of the pregnant patient
- Counseling regarding breastfeeding
- Management of post-partum complications
- Providing an infertility assessment

- Management of ovarian cyst
- Management of endometriosis
- Management of interstitial cystitis
- Management of chronic pelvic pain
- Management of sexual dysfunction
- Management of eating disorders
- Management of female athlete triad
- Transgender, female to male care
- Transgender, male to female care
Second Round

• Rank the importance of each topic considering: their individual rating, the mean rating, and the standard deviation

• Presented with the list of “Critical Topics” and asked to indicate whether or not they agreed with the designation as a critical topic using a 1-5 Likert scale
Final Analysis

• We calculated mean importance rating for all topics and mean agreement rating for the critical topics

• Our list of critical topics mirrored our important topics

• Our consensus list included any topic that received a mean importance rating of ≥4
Results

Identified 41 women’s health experts and invited to participate

19/41 completed the first round

19/19 completed the second round
Expert Panel

• Panel represented 17 different programs from across the country, both VA and non-VA programs

• There was no statistically significant difference in VA association, SGIM membership, or residency/fellowship directorship between responders and non-responders
### Demographics

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<thead>
<tr>
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<tbody>
<tr>
<td><strong>Mean age, years</strong></td>
<td>45.7</td>
</tr>
<tr>
<td><strong>Length of clinic practice</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;5 years</td>
<td>15.8% (n=3)</td>
</tr>
<tr>
<td>5-10 years</td>
<td>15.8% (n=3)</td>
</tr>
<tr>
<td>11-15 years</td>
<td>21.1% (n=4)</td>
</tr>
<tr>
<td>16-20 years</td>
<td>26.3% (n=5)</td>
</tr>
<tr>
<td>&gt;20 years</td>
<td>21.1% (n=4)</td>
</tr>
<tr>
<td><strong>Academic rank</strong></td>
<td></td>
</tr>
<tr>
<td>Clinical instructor</td>
<td>10.5% (n=2)</td>
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<tr>
<td>Assistant professor</td>
<td>15.8% (n=3)</td>
</tr>
<tr>
<td>Associate professor</td>
<td>42.1% (n=8)</td>
</tr>
<tr>
<td>Full professor</td>
<td>31.6% (n=6)</td>
</tr>
<tr>
<td><strong>Direct a women’s health training program</strong></td>
<td></td>
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<tr>
<td>Yes</td>
<td>31.6% (n=6)</td>
</tr>
<tr>
<td>No</td>
<td>68.4% (n=13)</td>
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<tr>
<td><strong>Completed a women’s health fellowship</strong></td>
<td></td>
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<tr>
<td>Yes</td>
<td>36.8% (n=7)</td>
</tr>
<tr>
<td>No</td>
<td>63.2% (n=12)</td>
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</table>
Consensus List

• 35 of topics (62.5%) received an importance rating of ≥4
  – indicating that they were “very important” or “essential”

• These topics made up our consensus list of women’s health topics
Table 2
<table>
<thead>
<tr>
<th>Diagnosis Of</th>
<th>Management Of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelvic Pain</td>
<td>Chronic Pelvic Pain</td>
</tr>
<tr>
<td>Abnormal Uterine Bleeding</td>
<td>Endometriosis</td>
</tr>
<tr>
<td>Sexual Dysfunction</td>
<td>Interstitial Cystitis</td>
</tr>
<tr>
<td>PCOS</td>
<td>PCOS</td>
</tr>
<tr>
<td>Intimate Partner Violence</td>
<td>Intimate Partner Violence</td>
</tr>
<tr>
<td>Eating Disorders</td>
<td>Eating Disorders</td>
</tr>
</tbody>
</table>
## Pregnancy Related Topics

<table>
<thead>
<tr>
<th>Important Topics</th>
<th>Less Important Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preconception Counseling</td>
<td>Pregnancy option counseling</td>
</tr>
<tr>
<td></td>
<td>Counseling regarding breastfeeding</td>
</tr>
<tr>
<td></td>
<td>Co-management of the pregnant patient</td>
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<tr>
<td></td>
<td>Management of post-partum complications</td>
</tr>
<tr>
<td></td>
<td>Providing infertility assessment</td>
</tr>
</tbody>
</table>
Strengths

• Inclusive and specific list of topics

• Developed by generalist women’s health educators

• 100% completion rate of the two-round Delphi

• Sufficiently powered for the Delphi technique
Limitations

• Our study represents one point in time

• Our results are only reflective of the opinions of our expert panel

• Delphi technique favors consensus which may overshadow minority opinions
Conclusions

Our consensus list of 35 topics will allow residency programs to
– assess their women’s health educational efforts
– prioritize their educational efforts
– assess the competency of their residents
Dissemination

• Poster presentation at SGIM 2016

• Accepted for publication by the Journal of Women’s Health
Next Steps

• Multi-institutional survey to evaluate the impact of women’s health residency tracks on the careers of graduates

• Collaborating with women’s health tracks directors at Northwestern, Brown, and the University of Alabama
Next Steps

Hypothesis is that graduates of women’s health residency tracks are more likely:

- To remain clinically involved in women’s health
- To produce scholarly work related to women’s health
- To become leaders in their fields
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EVERY VOTE COUNTS
Questions?