

Playing with Research: Converting Research Question into a Study Design

I. The Research Question

- a. A compelling question to explore so that a positive or negative outcome helps contribute to knowledge base

II. Terminology

Stakeholders: the people who are most invested and effected by your research question

*****N=** number of people in your study (more the better)

Independent variable: Outcome of interest; what we are looking for

Dependent variable: The intervention of interest; what we are doing

Incidence: new cases

Prevalence: how common is something at a certain time point

Null Hypothesis: There is no difference

Alternative Hypothesis: There is a difference

Type I Error: We say there is a difference when there actually is none. (False positive)

Type II Error: We say there is no difference when there actually is one. (False negative)

*****Loss to follow up:** people that drop out of study, makes analysis difficult

*****Sampling:**

Random: preferred, reduces bias, more generalizable

Convenience: introduces more bias, less generalizable

Quantitative Study Design:

Observational	Descriptive	Case report	<i>Weakest</i>
		Case series	
		Correlational	
		Surveillance	
	Analytic	Cross-sectional	
		Case-control	
Experimental	Cohort		<i>Strongest</i>
	Nonrandomized controlled trial		
Randomized controlled trial			

PowerPoint slides from Dr. Saba Masho, MD, MPH, DrPH
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Research Design	Description	Strengths	Weaknesses
Cohort	Follow a certain group over time a. Retrospective b. Prospective	Good for measuring incidence, common outcomes	<u>Retrospective</u> : less costly, but no control over data collection <u>Prospective</u> : more costly, time consuming
Case Control	2 similar groups, 1 with certain outcome 1 control group	Good for rare occurrences; Fast, inexpensive	Difficult to assign into groups
Cross-sectional	Measurement at single point in time of both exposure and outcome	Inexpensive, no loss to follow up	Cannot find causal relationship
Quasi-experimental	Experiment around natural event	Ethically sound	Can get closer to causal relationship

Correlation is NOT Causation

Qualitative Design:

Description	Strengths	Weaknesses
Surveys Interviews Focus groups	Good for theory building, in depth understanding	Time consuming (coding), difficult to generalize

Ethical Considerations:

Institutional Review Board (IRB)

Under FDA regulations, an **IRB** is an appropriately constituted group that has been formally designated to review and monitor biomedical research involving human subjects. In accordance with FDA regulations, an **IRB** has the authority to approve, require modifications in (to secure approval), or disapprove research.

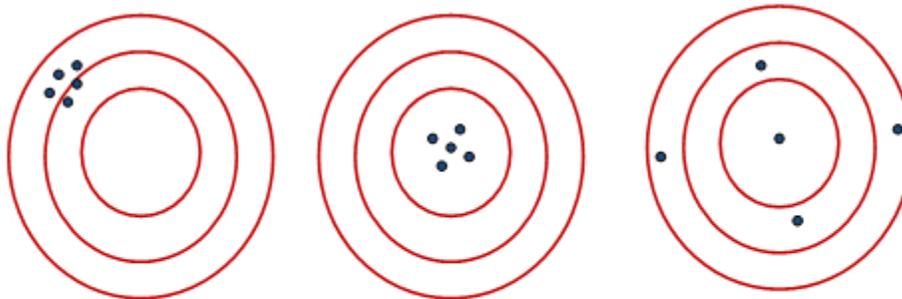
Reliability: Is this reproducible?

Validity:

Construct: Are we measuring what we are seeking to measure?

Internal: Does the design make sense? Accounts for confounding and bias?

External: Do the results of this study generalize to other populations, situations, environments?



Reliable
Precise
Lack of Random Error

Reliable and Valid

Valid
Lack of Systematic Error

Confounding: A situation in which the effect or association between an exposure and outcome is distorted by the presence of another variable.

Bias: A systematic error in the design, recruitment, data collection or analysis that results in a mistaken estimation of the true effect of the exposure and the outcome.

- Volunteer bias- those that volunteer are dissimilar to those that don't volunteer
- Recall bias - if individuals can't remember exposures accurately, then information bias would occur
- Socially desirable response - if study participants consistently give the answer that the investigator wants to hear, then information bias would occur

<https://onlinecourses.science.psu.edu/stat507/node/3>

Community Based Participatory Research : Growing philosophy of research that focuses on partnership with community for long lasting change. Requires commitment from researchers/community partners/ community members. Process is often months or years. Potential for sustained change. Implications for our interactions with target populations? Disenfranchised?

IMRAD Standard Format for Published Research Papers

Introduction: States research question and cites importance among existing literature; theory?

Methods: Sampling method, research design, statistical tests

Results: Should report all relevant data from what was named in methods section. (look for missing or incomplete information)

Discussion: Interprets the results in relationship to initial research question. Acknowledges bias, how initial theory was/ was not supported. Suggests further research. **Remember correlation is not causation!**

Worksheet: Converting Research Question into a Study Design

Research Question:

Stakeholders:

Independent Variable:

Dependent Variable(s):

Sampling: Convenience? Random?

Inclusion criteria?

Exclusion criteria?

N (number of participants)?

Study Design:

Qualitative

Survey (online, in person, open ended questions, semi-structured, structured) In depth interviews, Focus Groups

Quantitative

Cross sectional? Cohort? Quasiexperimental? Use of assessment tool?

Mixed methods (combo of qualitative and quantitative)

Ethical considerations: (What risk is posed to participants?)

Confounders: (What other factors may be influencing your outcome?)

Bias:

Commonly Utilized Validated and Reliable Assessment Tools

- 1) Brief RCOPE
- 2) Satisfaction with Life
- 3) FACIT-SP

Brief RCOPE

Reference: Pargament, Kenneth, Feuille, M., and Burdzy, D. *The Brief RCOPE: Current Psychometric Status of a Short Measure of Religious Coping*. Religions 2011, 2, 51-76.

0-3 Likert Scale where 0= “not at all” 3= “a great deal”

The Brief RCOPE: Positive and Negative Coping Subscale Items.

Positive Coping Subscale Items
1. Looked for a stronger connection with God.
2. Sought God’s love and care.
3. Sought help from God in letting go of my anger
4. Tried to put my plans into action together with God.
5. Tried to see how God might be trying to strengthen me in this situation.
6. Asked forgiveness for my sins.
7. Focused on religion to stop worrying about my problems.

Negative Coping Subscale Items
8. Wondered whether God had abandoned me.
9. Felt punished by God for my lack of devotion.
10. Wondered what I did for God to punish me.
11. Questioned God’s love for me.
12. Wondered whether my church had abandoned me.
13. Decided the devil made this happen.
14. Questioned the power of God.

Satisfaction with Life Scale

Reference: Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.

Scale:

Instructions: Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

____ In most ways my life is close to my ideal.

____ The conditions of my life are excellent.

____ I am satisfied with my life.

____ So far I have gotten the important things I want in life.

____ If I could live my life over, I would change almost nothing.

Scoring:

Though scoring should be kept continuous (sum up scores on each item), here are some cutoffs to be used as benchmarks.

- 31 - 35 Extremely satisfied
- 26 - 30 Satisfied
- 21 - 25 Slightly satisfied
- 20 Neutral
- 15 - 19 Slightly dissatisfied
- 10 - 14 Dissatisfied
- 5 - 9 Extremely dissatisfied

FACIT SP

References:

<http://www.facit.org/FACITOrg/Questionnaires>

Peterman, Amy, Fitchett, G., Brady, M et al. *Measuring spiritual well-being in people with cancer: The functional assessment of chronic illness therapy---spiritual well-being scale (FACIT-Sp)*. Annals of Behavioral Medicine Feb. 2002, Vol. 24, Issue 1, pp 49-58.

Below is a list of statements that other people with your illness have said are important. **Please circle or mark one number per line to indicate your response as it applies to the past 7 days.**

<u>PHYSICAL WELL-BEING</u>		Not at all	A little bit	Some- what	Quite a bit	Very much
GP1	I have a lack of energy	0	1	2	3	4
GP2	I have nausea	0	1	2	3	4
GP3	Because of my physical condition, I have trouble meeting the needs of my family	0	1	2	3	4
GP4	I have pain	0	1	2	3	4
GP5	I am bothered by side effects of treatment	0	1	2	3	4
GP6	I feel ill	0	1	2	3	4
GP7	I am forced to spend time in bed	0	1	2	3	4
<u>SOCIAL/FAMILY WELL-BEING</u>		Not at all	A little bit	Some- what	Quite a bit	Very much

GS1	I feel close to my friends	0	1	2	3	4
GS2	I get emotional support from my family	0	1	2	3	4
GS3	I get support from my friends	0	1	2	3	4
GS4	My family has accepted my illness	0	1	2	3	4
GS5	I am satisfied with family communication about my illness	0	1	2	3	4
GS6	I feel close to my partner (or the person who is my main support)	0	1	2	3	4
Q1	<i>Regardless of your current level of sexual activity, please answer the following question. If you prefer not to answer it, please mark this box <input type="checkbox"/> and go to the next section.</i>					
GS7	I am satisfied with my sex life	0	1	2	3	4

EMOTIONAL WELL-BEING

		Not at all	A little bit	Some-what	Quite a bit	Very much
GE1	I feel sad	0	1	2	3	4
GE2	I am satisfied with how I am coping with my illness	0	1	2	3	4
GE3	I am losing hope in the fight against my illness	0	1	2	3	4

GE4	I feel nervous	0	1	2	3	4
GE5	I worry about dying	0	1	2	3	4
GE6	I worry that my condition will get worse	0	1	2	3	4

FUNCTIONAL WELL-BEING

		Not at all	A little bit	Some-what	Quite a bit	Very much
GF1	I am able to work (include work at home)	0	1	2	3	4
GF2	My work (include work at home) is fulfilling	0	1	2	3	4
GF3	I am able to enjoy life	0	1	2	3	4
GF4	I have accepted my illness	0	1	2	3	4
GF5	I am sleeping well	0	1	2	3	4
GF6	I am enjoying the things I usually do for fun	0	1	2	3	4
GF7	I am content with the quality of my life right now	0	1	2	3	4

ADDITIONAL CONCERNS

		Not at all	A little bit	Some-what	Quite a bit	Very much
Sp1	I feel peaceful	0	1	2	3	4

Sp2	I have a reason for living	0	1	2	3	4
Sp3	My life has been productive	0	1	2	3	4
Sp4	I have trouble feeling peace of mind	0	1	2	3	4
Sp5	I feel a sense of purpose in my life	0	1	2	3	4
Sp6	I am able to reach down deep into myself for comfort	0	1	2	3	4
Sp7	I feel a sense of harmony within myself	0	1	2	3	4
Sp8	My life lacks meaning and purpose	0	1	2	3	4
Sp9	I find comfort in my faith or spiritual beliefs	0	1	2	3	4
Sp10	I find strength in my faith or spiritual beliefs	0	1	2	3	4
Sp11	My illness has strengthened my faith or spiritual beliefs	0	1	2	3	4
Sp12	I know that whatever happens with my illness, things will be okay	0	1	2	3	4

Article Critique Questions

What is the research question? What are they claiming?

Is their N =number of participants adequate to support this claim?

How did they sample? (Random or convenience) Was this appropriate to answer the question? Did they miss any significant

Was the research design appropriate? Strengths/weaknesses

Compare Methods and Results section

Literature review adequate?

Tools For Accessing Research

1) PubMed

- a. Through Institution
- b. Through Library

2) Mendeley

www.mendeley.com

- a. free
- b. will filter and send articles to you
- c. tool for saving articles of interest

3) Templeton website

- a. www.researchliteratchaplaincy.org
- b. Resource tab
- c. Summer Institute
- d. Fall online course (FREE!)

4) George Fitchett’s White Paper

- a. Great overview of what research has been done in spirituality/religion and health

Personal Goals for Integrating Research:

One month

Six months