Health Medical Research Fund – Grant Skills Training Workshop

Doris Yu
Professor, Vice Director in Research

Faculty of Medicine
The Chinese University of Hong Kong

The Nethersole School of Nursing
Experience sharing

Writing a grant = Telling an exciting story

Three major components
An exciting story ...

A critical issue, if not resolve, will lead to serious consequences

A powerful and reliable method to understand the situation and problem shooting

In what ways the issues can be fixed and the consequences can be eliminated.
An exciting story ...

Background

Methods

Purpose and potential
Background

• A highly important session to ‘win the heart’ of the reviewers.

• Identify a critical issue:
  – Preferably match with the thematic area of the HMRF.
  – “critical” → discuss how ‘big’ is the issue.
    • Extensiveness: Number
    • Impact → individual level, family level, system level and societal level
    • Discuss the missing pieces in resolving the problem
Background

• Convince the reviewers that there are missing pieces.
  
  – A critical review of the up-to-date research evidence which addresses the issue.

  – Make a strong argument about:
    • What are the missing pieces?
    • Why identifying the missing pieces are important?
The missing piece

• “The ‘Expectation-Evidence paradox’ on the sleep-promoting effect of exercise urges for more stringent scientific evaluation on this lifestyle intervention. The positive findings from the pilot studies imply the need for full-scale randomized controlled trial to examine the effect of moderate-intensity exercise on subjective and objective sleep measures. Future study also needs to avoid using black-box research but to examine the mediating process between exercise and sleep, so that how and why this lifestyle intervention affect late-life sleep can be elucidated. Indeed, exploring the acceptability and perception of older adults on using exercise as a lifestyle intervention to improve sleep also facilitate the subsequent knowledge transfer.”

What is the missing piece
Why it is important

The more the missing pieces you can address, the higher may be the impact of the study?
The missing piece

Relevance of the missing piece to local context.

“…the patient empowerment model and tele-care, will be coherent with the strategies advocated by the health care service in Hong Kong for chronic disease management. In view of the inadequacy of current health care practices …., there is an urgent need to examine the effects of the empowerment-based educational model in our health care setting.”

Work out the critical issue & missing piece with the service stakeholder from Day One!!
The missing piece

• Make a strong argument about how to address the missing piece.

Justification for the research hypothesis
- Why the variables are related in the specified manner?
- Why the interventions can improve the outcomes?

Theoretical framework or conceptual framework
• Keep the wheels spinning…

– Present the research questions that are coherent with the missing pieces.

– Putting down research hypotheses that are based on the conceptual/ theoretical framework in your background.
Method

• “Orientate the reviewer about the “roadmap” to answer your research questions”
Method: personal experience

Personal responses to reviewers’ comments:
“why they questioned the arrangement for sampling? It is needed because of ... [sth I did not spell out in the proposal]

“why they challenge the lack of clarity of the intervention? How can I put down every details within the word limit?”

“I already stated the analysis for this research question, why they said there was no information.” ... [the proposal is not well organized]

“Why they challenged this statistical test, I used this method because ... ... [sth I did not spell out in the proposal]"
Method: learn from failure

- Four characteristics of the roadmap:
  - Comprehensive and precise;
  - Feasible even though it may be challenging;
  - Highly reliable (scientific rigor);
  - Convincing (with strong justifications)

Keep challenging yourself:
“Is this method the “best” in terms of the four characteristics?”
“Why?”
“Have I make the justifications explicit to the reviewers.”
An illustration: Sampling

• From failure to success

Eligible patients will be Chinese people aged 55 or over, ..., with a confirmed medical diagnosis of CHF of at least 6 months standing, and with NYHA Class II-IV symptoms. The last two criteria exclude those who may not perform self-care because they are lack of illness experience or have too mild symptoms.
Power analysis, using the method of Hedeker et al\textsuperscript{17} to estimate the sample size for a repeated measure study with attrition, will be adopted. \textbf{According to three similar studies, the effects size (Cohen’s d) of self-care programmes ... on [outcomes] ... at the 3-month study end-points were 1.24, 0.89, 0.45, and 0.54 respectively.\textsuperscript{13-15} .....current study aims to detect a small to medium effect size of 0.40 on the primary and secondary outcomes. ... ... assuming there is no between-group difference on the outcomes at the baseline after randomization ... ...}
An illustration: Sampling

• From failure to success

List out block randomization

Block randomization with a block size of 8, 10 or 12 will be used. The sequence of subject allocation will be generated in two stages. First, the sequence will be generated. Second, subjects chronologically recruited to the study will be allocated to the study groups by...
Interventions

- Using Appendix to fight against the word limits
- In text:
  - Who is the intervener?
  - Based on any guidelines?
  - State the core components with brief descriptions in sequence?
  - State ways to ensure integrity of intervention. (e.g. attaining moderate-intensity level of Ex, ways to optimize clients’ compliance)

Invite another person to read this part, see if s/he understands how your intervention is going to be conducted.
Intervention (in Appendix)

Additional Appendix 1: Protocol of Exercise Training

**“Moderate-Intensity 7.5-cm-high Bench Stepping Exercise Program for Seniors”**

10-min Warm-up

10-min Stepping

10-min Stepping

10-min Stepping

10-min Cool-Down

**Exercise intensity**
Subject’s exercise intensity will be monitored by Borg Rate of Perceived Exertion (RPE), reaching 12-14 (i.e., “somewhat hard”)

Moderate exercise intensity will be achieved by subject’s self-adjustment of the stepping pace with the attending RA’s assistance

The exercise duration will be increased gradually from 20-min to 40-min (targeted duration) in the initial 4 weeks of the 16-weeks training program

**Exercise mehtods**
Basic training to perform the following procedure of bench stepping exercise will be provided by the trainer in the first session. Subjects will follow the standard instructions below for performing bench stepping exercise:
1. Keep the head in a neutral position with the gaze forward. Not drop the head or hyper-extend the neck.
2. Chest up and shoulder pulled back. Naturally swing the upper limbs to maintain the body balance.
3. Start with right leg as the leading leg. Maintain proper form, never hold your breath. Breathe just naturally as walking down the street or up a hill.
4. Pull the whole right foot flat on the bench. Step up through the heel of the right foot. Not push off with the trailing leg.
5. Bring the trailing leg to the top of the bench and place the whole left foot flat on the bench. Step down with the lead leg. Keep the foot flat on the floor and on the bench.
6. Bring the trailing leg down to the floor.
7. The trailing leg now becomes the leading leg and the movement is repeated on the other side.

**Warm-up Exercise:**
Stretching exercise & stationary mobilizing exercise for trunk and limb joints at both upper and lower bodies (e.g., shoulders, elbows, wrists, hips, knees, and ankles)

**Cool-down Exercise:**
Slow walking exercise & stationary trunk and limb mobilizing exercises involving joints of shoulders, elbows, wrists, hips, knees, and ankles.
Intervention

• Gain confidence of the reviewers for complicated intervention:
  – Pilot study;
  – Describe facilitation to ensure a smooth delivery;
  – Describe the mechanism to monitor the fidelity.
  – Describe the mechanism to safeguard and manage adverse events.
Data analysis

• Structure the analysis in the same sequence as your research questions.

• Make sure all the collected data are being mentioned in this session.

• Provide justification about why this particular test is being used but not the others.

• If the study used mixed-method, make sure all quantitative and qualitative analysis are well described.

• Always invited a statistician to the project team if the study involves sophisticated analysis.
Purpose and potential

• Major challenge:
  – After the long battle with Section 13a-f, … … run out of energy / time to write the 13g.

  – Just re-literate & summaries how important to address the missing piece. (Section 13b)
The study is nicely presented, but why do I have to give you funding to conduct this study?

How important is yours as compared with the other?

What’s next if funding is provided to you to complete the study?
Purpose and potential

Inform health service planning

Reform the existing health services

Concisely recap the critical issue

Roadmap for knowledge transfer

Advance of health-related knowledge
Final words …

• **Time is luxury** for clinicians and academicians, but “no pain no gain”.
• Develop the research idea with **the service stakeholders**.
• Despite the word limit, **write as much as** you can in the first draft.
• Critically review the first draft to **remove** any sentences or even words which **do not play a role** in the proposal.
• **Effective use of appendix** [an important buffer for page limit]
• **Peer review** by someone in your area and not in your area.
Make your story exciting and perfect