KEY COVARIATES
IN PRIMARY HEALTH CARE RESEARCH

Workshop Module for
Transdisciplinary Understanding and Training on Research – Primary Health Care (TUTOR-PHC)

A collaborative initiative by

DALHOUSSIE University
McMaster University
Université de Montréal
Western

Funding provided by

CIHR IRSC

Institutes of:
Aging; Aboriginal Peoples Health; Gender and Health; Health Services and Policy Research; Nutrition, Metabolism and Diabetes; Population and Public Health

Compiled June 19, 2007
Key Covariates in Primary Health Care Research
TUTOR-PHC Workshop Module

Objectives
1. Become familiar with the concepts of the role of co-variates and their influence in a quantitative study;
2. Learn about some of the important co-variates particularly relevant to studies in Primary Health Care and how they are measured; and
3. Read and comment on Primary Health Care papers illustrating co-variante inclusion and analysis.

Reading Assignments
Mandatory Readings:

Additional Readings (not mandatory):

Tasks/Exercises:
Week 1
Discuss the co-variates that you would use to design a study using administrative data to assess the effects of continuity of care for dying parients.
Week 2
Read a short discussion paper on key co-variates and then list key co-variates in primary health care from the perspective of your discipline. Participant responses will be compiled to create a group list of key co-variates.
Week 3
Read two unpublished papers and identify the independent variable, dependent variable, and key co-variates in each. Discuss what co-variates you would add to each study, as well as how the authors handled their co-variates.
Discussion Summary
Number of participants: 6
Total number of messages: 71
Number of facilitator posts and comments: 19

Week 1 – Original Facilitator post (verbatim)
Hello everyone - here is a question for you to think about and provide the group with your opinion on....
Some think that family physicians should "go the extra mile" in caring for the dying by being available to these patients ensuring continuity of care (in the sense of seeing the same physician most of the time). If you were to design a study using administrative data to examine this question for patients dying of cancer

1. How might you do it? and,

2. What do you think would be the key co-variates that should be included?

Thanks.

Number of participant posts: 17
Number of facilitator comments: 7

Selected facilitator comments

- Great discussion points all. I think some good points have been made about the covariates of interest and particularly trying to think out which are really important. Sometimes with administrative data (and this can happen with survey work as well), we add variables just because they are available but don't think through conceptually why we might want to include them.

Are there other variables, if we had access to them that would be important to measure in terms of the possibility of them "intervening" as the Kiely paper says in the relationship between independent and dependent variables?.... are there any confounding variables likely to exist in this situation?

So often we seek to find a way to measure these "contextual" variables that impact on outcome, but we must also acknowledge that some are just not measurable. This gets back to the mixed methods approaches to studying some of these concepts that we discussed way back in May at the symposium. As Kiely says: "contextual variables could be intervening or confounding, but deciding between the two depends on knowledge of the subject matter and not on statistical tests" (p247)

I agree with you Sandra about other providers. I have a particular interest in the role of family physicians and we have no easily accessible databases that describe the contacts with many of the other providers you mention. We are in the middle of a study here now that will help us mark the involvement of homecare in caring for these people at home.

So... as we wind down this discussion tonight and tomorrow... any last comments to be made?... One I would make comes from earlier in the week actually and is not so much related to covariates but to the idea of
continuity as a dependent variable rather than independent. There is a paper on this in the Annals of Family Medicine last year... for many of us family docs, I think conceptually we think of continuity as a "vehicle" that enables better outcomes for patients, not as an outcome in and of itself. But in today's fractured health system, continuity may be a goal in and of itself. This, however is an entirely different research discussion for another time.

Next week we'll give you another paper to read that we'll discuss for most of the week.

**Week 2 – Original Facilitator post**

This week you will read and discuss a short paper by M. Stewart (Discussion paper on co-variates-attached), written from her perspective for this workshop.

You will begin to create a list of what you consider to be the key co-variates in primary health care research.

**TASK**

Please list key co-variates from your discipline’s perspective that are relevant to Primary Health Care research.

We are going to build a reference list and a resource list, together.

**Number of participant posts:** 16  
**Number of facilitator comments:** 7

**Selected facilitator comments**

- The discussion is off to a great start. What a pleasure to have an entirely different "discipline perspective" than we've ever had in these groups before with Mary’s oral health issues.  
  I like Julie's conceptual model description, especially the first order/second order idea. Do you want to expand on why you have such "orders"?. How might they be handled in analyses.
  On another note... please keep an eye on abbreviations: LBW=low birth weight and CCHS is Canadian Community Health Survey. Others I saw go by last week included: OHIP Ontario Health Insurance Plan and CCAS Community Care Access Centres (which organize home care in Ontario among other things)..  
  Keep on going... at the end of your comments, try and just list the new covariates you are proposing. If you have any references to justify their addition, attach them as well (just the citations please)
  Thanks

- HI all,  
  The discussion is growing and as you can see the list is potentially, never ending. I like the ideas of the provider characteristics.. particularly these days with the slowly emerging team structures.
  Mary's comments on the micro (clinical) and more meso/macro (social) issues is an important way of thinking about these. This is why it is sometimes so useful to have a conceptual framework for your study so that these variables can be clustered in to different groupings, so that you can identify the ones you need and then figure the statistical ways of handling them in the analyses.
If you had to say which were the "minimum" to try and always include in a quantitative study, can you say?.. or would it be too difficult unless you knew the research question in advance?

Once again, I am also asking for any references that you can cite/think of that connect with this topic. One of our goals was to build this reference list if possible.

**Week 3 – Original facilitator post**

This week you will read and discuss two unpublished papers (1 - Re-utilization of health care and comparative costs of minor acute illness treated at family physicians offices, walk-in clinics and emergency departments: The Ontario Walk-in Clinic Study and 2 – Factors associated with choice of family practice, walk-in clinic and emergency department settings for minor acute illness: The Ontario Walk-in Clinic Study) which included co-variates. Which ones did these papers include? Which were missing? How were they handled in the study – matching, stratification, exclusions, statistical analyses?

**TASK 1**

Please read two papers, as yet unpublished (so please do not distribute them) but used with the author’s permission.

Start with the paper entitled Factors associated with choice of family practice, walk-in clinic and emergency department settings for minor acute illness: The Ontario walk-in clinic study.

**Follow-up to original facilitator post**

Hi all,

Sorry for the confusion on the papers.. I'll take the blame there!

Now to wind down over the next 2 days, we'll finish the other paper.

**TASK 2**

With regard to the paper entitled Re-utilization of health care and comparative costs of minor acute illness treated at family physicians offices, walk-in clinics and emergency departments: The Ontario walk-in clinic study:

What is the independent variable?

What is the dependent variable?

What are the co-variates?

a) What co-variates would you add?

b) How did the authors handle the co-variates?

c) How would you conceptualize these co-variates?

This is also your last chance to submit any other "co-variante" references that might be useful. We'll try and compile the list and send it out after the course is over.

**Number of participant posts:** 19

**Number of facilitator comments:** 5

**Selected facilitator comments**

- My you people stay on task well!...Thanks for the Andersen/Newman paper Julie. There is another one out now, something about the model "revisited" .. if I find the reference I'll pass it on. It is more focussed on
extending the model to predict health outcomes. As we're discovering in this workshop, it is really important to have a "conceptual" understanding of the phenomenon under study BEFORE you use available covariates in regression model building. As Moira has said in this workshop when we did it a couple of years ago: "regarding how conceptualization effects the outcomes of the research... this is really a key message of this workshop. Statistics don't replace the thinking. The challenge we all have is how to measure the variables adequately from our conceptualization and how to build on that conceptualization over time in developing a program of research."

Wind up your concluding thoughts tomorrow if you can.

- Well all, we've come to the end of the workshop.. last Friday but I thought I'd wait and see if there were any weekend postings before I summarized... and there were. Thanks Krista for the paper, it was the more recent one of Andersen's that I was referring to. You have all done a great job on identifying the factors and trying to stay "conceptual" in your thinking. That's great. As to the mediator/modifier and confounder/effect modifier language issue.. I believe it's not so important what you call them (and different disciplines clearly call them different things and that's why we've used the generic term "co-variates for this workshop).... but rather it is understanding the relationships between those factors and the independent and dependent variables under scrutiny. How do they relate to them? how might they influence them or be influenced by them? These are the things you need to think through as you propose your analytic approach, as you conduct that analysis and as you report the results.

I hope the discussions have been useful. I will try and collect the references you submitted and put them with the ones we have from the last time we did this course and either email them to you or post them as a last posting on the course site.. so check back in a week or so to see if it's there (if not.. nudge me to make sure I get it done!!)

It's been a pleasure being with you all again these past three weeks... good luck with the remainder of the year.

Additional References provided during the workshop

Participant Feedback
Average workshop rating (1=poor, 5=excellent): 3.8
Selected comments
- Comments related to the instructor
  - [The instructor] commented just enough – not too much so as to give it all away. That allowed one to have to think and work it out oneself.
  - [The instructor] is very accomplished in this area and it was great to have him facilitating this session. Although it was clear that he was involved and attentive to the discussion, I was a little frustrated that there wasn’t more feedback from him about whether or not comments in the postings had merit, were on the right track or not. In other words, were we correct in our analyses? There was a lot of
brainstorming going on but it was difficult to know whether or not the ideas posted were realistic or even correct.

**The most useful part of this workshop was**
- I thought the mandatory readings at the outset of the workshop were most helpful. They were well chosen, concise and at the appropriate level for this diverse group. They provided a great jumping off point for the discussion and I know they will be references that I will continue to use. The research papers gave us an opportunity to apply knowledge gained from the readings – also very helpful.
- Learning how to recognize covariates in studies and to see how important it is to take them into account. I will be able to evaluate the robustness of studies better now.

**Suggestions for improvement**
- I would start the seminar with a brief introduction of covariates (and more emphasis on the difference between moderators/mediators . . . and different terminology – effect modifiers, confounders, etc.). Then include a discussion of the two Campbell, MK articles which would be followed finally by a discussion of important covariates specific to everyone’s discipline.

*This workshop module was offered in November 2006*. For more information, please contact the TUTOR-PHC program manager at tutor@uwo.ca.