



Health Human Resources (HHR) Databases

Report from the NHSRU Research Forum held December 3, 2007

Linkage of Data and Research, Application of Data to Help Health Human Resources (HHR) Modeling

Presenters: Drs. Linda O'Brien-Pallas, Dr Gail Tomblin Murphy, & Dr Sping Wang

- The presentation highlighted the process of utilizing secondary databases and gave examples of 3 projects which utilized data to answer research questions, emphasizing the importance of good data quality and how policy makers can benefit from the data and from research results.
- Process of acquiring & using data:
 1. Database holder and data agreements required.
 2. Once the data has been housed, ensure data quality for accessibility.
 3. Clean the data for accuracy and consistency.
 4. An innovative approach is taken if crucial information cannot be found in the secondary database.
 5. Common challenges include handling measurements, missing data and selecting proper data analysis models.

Project 1: Prime market for nursing workforce (focusing on the HHR of the nursing graduate workforce)

Research question: How do RNs and RPNs differ in labor market characteristics and how does this impact the HHR planning of Ontario's new grads?

- College of Nurses of Ontario (CNO) data is used to model the supply based models of Ontario new grad requirements. The longitudinal CNO data allows examination of various labor market characteristics of the nursing workforce over time.
- While CNO data is excellent, certain data processing (e.g. imputation) is still required so that the data can be compared in the longitudinal analysis.
- Data showed RNs and RPNs have very different labor market characteristics and they require very different HHR planning to offset workforce losses, to meet the demands and requirements of the service providers.

Project 2: Mix-based HHR models for chronic care and homecare in Ontario sectors and the relationship of nursing input and the services used with patient health outcome variables.

1. First set of research questions: Does variation in nursing service utilization in chronic care facilities explain the variation in facility-based outcomes; and does variation in nursing service utilization in home care programs explain the variation in program-based outcomes?

- Data was acquired from different sources and consisted of different levels (e.g., patient level, facility level, PHU levels). The data was processed, linked and aggregated to the facility- or program-level before we could proceed to the analysis.
- Several data issues were identified: no reliable quantitative data for homecare (i.e., hours of visits not available, extreme number of visits per day), postal codes missing.
- 2. Second set of research questions: Does the variation in individuals' use of chronic care explain the variation in health status; and does the variation in the individuals' use of home care explain the variation in health status?*
- The data processing was straightforward, but time consuming as there were data considerations such as how long an observation period for homecare service use should we consider. In this case we used one year.

- Several data issues were identified: low data linkage rate between CCHS and chronic care database, measurement issues regarding observation period, data quality such as overlapping dates, date missing, etc.

Project 3: HHR models for the Primary Health Care Nurse Practitioners.

Research questions: How many NPs are available to deliver health care services to the population; and how many NPs are required to ensure sufficient services to meet the needs of the population?

- The population needs were modeled for the each of the 3 sectors where primary health care NPs work: community (urban and rural), the emergency department, and the long term care sector, and data requests were made to various data providers.
- Work productivity and NP supply data were required in order to calculate the supply requirements.
- There was a lengthy process to get all the data elements required for modeling; data came from different sources; people in charge of the database did not always understand the data request, etc.
- The biggest frustration was the availability of data such as work productivity. It was either not collected or not detailed enough.

Recommendations:

1. An investment in information systems to conduct the data verification would make data more accessible for data inquiries.
2. Invest in human resources for data management. For example when we worked on the OHCAS homecare data and tried to understand the data elements, we were told by the data provider that they only processed the data and could not provide us with any insight into the data history or limitations and the people that knew the data had left the homecare division.

During the discussion portion of the presentation, several questions from the audience were addressed including:

In your first assimilation model I don't think I have grasped this notion RPN adjusted, what is the utility of coming out with something like that in the assimilation process? Why are we looking at RPNs and at the same time RNs employment trends? What is the value of this, of looking at employment patterns and adjusting RN numbers based on those patterns, as opposed to guess logically looking at RPNs on its own.

- The ministries wanted to know the number of new graduates required in the labor market for RNs and RPNs. We modeled for both nursing groups and found we needed far more Ontario new RPN graduates than RN graduates relative to their workforce size. To verify the drastic needs for RPNs, we then plugged in RN employment patterns to see how the trend would differ; we confirmed that if RPNs had the same patterns as RNs (younger workforce, lower attrition rate, etc.), the need for RPNs would be far less.
- It might not have practical values as RPNs do not have the same characteristics as RNs, but it highlighted the importance of different initiatives for different nursing groups.

Provincial and National Community Health Databases

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- A Pan Canadian research project is the result of an Ontario study funded by the Ministry of Health and Long-Term Care Nursing Secretariat that was conducted in 2004 and 2005. The purpose of that study was to investigate the demographic characteristics of the Community Health Nursing Workforce and the enablers and barriers for optimal Community Health Nursing practice.
- The Pan Canadian research project is funded by Canadian Health Services Research Foundation, Public Health Agency of Canada, Health Canada Health Human Resources, First Nations and Inuit Health Branch, Health Canada Health Policy Branch (Nursing), British Columbia. Ministry of Health (Nursing

Directorate, Communicable Diseases and Addictions Prevention), Vancouver Coastal Health, and Nursing Health Services Research Unit (Funded by MOHLTC, McMaster Site).

- The goal of this presentation is to assess databases relevant to Community and Public Health nurses in Canada; and to determine future database requirements for human resource planning.
- Existing Community Health databases include: the registration data collected by provincial and territorial regulatory bodies; the database collated by the Canadian Institute for Health Information (CIHI); Canadian survey of Community Health Nurses housed in the Nursing Health Services Research Unit (McMaster site); HHR databases collected by the provincial Ministries of health; employer databases; and education databases (Canadian Nurses Association, alumni databases).
- There are issues with the data available including variability in sub-sector definitions, over time and across provinces. It is difficult to report how many nurses are working in community sub-sectors. For example for public health, only nurses from Ontario, New Brunswick, Nunavut and the Northwest Territories (since 2003) had the opportunity to identify themselves as public health nurses on their registration forms. Public health could have fallen into a variety of “place of work” categories.
- The number of community and public health nurses were counted using CIHI data “place of work” sub sectors as follows:
 - All nurses identified as working in community health centre, home care agency and nursing station (outpost or clinic).
 - All nurses in “other place of work” sub sectors: physician’s office/family practice unit and business, industry and occupational health.
 - All nurses in private nursing agencies, educational institutions, associations and governments, self-employed and other IF their area of responsibility was community health, home care, ambulatory care or occupational health.
- It is difficult to identify public health nurses due to limited separate data from CIHI due to the variation in registration year end across provinces and territories. In 2006 national regulatory bodies began collecting information for the public health sector.
- There was agreement amongst the provinces that separate Public Health data would be collected, effective 2006. However, the CIHI data repository (2006) shows there are a total of 4,692 public health nurses but these represent only 5 provinces : Nova Scotia, n = 171; New Brunswick, n = 225; Ontario, n = 3,805; Saskatchewan, n = 267; and Alberta, n = 224. The number of community health nurses by province are Nova Scotia, n =916; New Brunswick, n = 879; Ontario, n = 13,374; Saskatchewan, n = 1,556; and Alberta, n = 3,646.
- The NHSRU Community Health Nursing questionnaire was utilized for the national survey. Demographic information includes position and place of work or sector of work. The sample was chosen based on nurses who self identified as community health nurses and had agreed to participate in research on their annual registration forms.
- The random sample was chosen from each sector based on an estimated 60% response rate for Ontario and 50% response rate for the national study at 95% confidence interval. All public health nurses in Ontario were included in the sample. The overall response rate was 57.2% (N=6667).
- Data issues:
 - Not possible to differentiate “community health centre” and “public health unit” as discrete workplaces.
- Terms are used inconsistently in many part of Canada. For example, in Alberta, British Columbia, Manitoba, Saskatchewan, Yukon, and Newfoundland a self identified public health nurse is as likely to say that she works in a community health centre as in a public health unit. In Ontario, Nova Scotia and New Brunswick most, but not all, who identified themselves as PHNs said that they worked in public health units.

In summary, there are inconsistencies amongst nurses, employers and federal, provincial and territorial regulatory bodies. There are different definitions of community workplaces, different terminology by nurses to describe the same community workplace, for example nurses in similar positions use different job titles. In addition, provincial regulatory bodies collect different information therefore they may submit data inconsistently in different categories to CIHI.

- Results:
 - 8 – 34% per province of community health nurses identified themselves as public health nurses.
 - There were 356 nurses out of a possible 602 who identified themselves as public health nurses that reported they worked in public health units (excluding Ontario).

Recommendations:

- Planning for community health requires accurate information about the number and demographic characteristics of the supply of nurses. Better workforce profiling could increase flexibility and mitigate public health threat such as during SARS when nurses were redeployed both within and across provinces
- Planning across provinces and territories could improve workforce planning and forecasting.
- Inter-provincial planning requires consensus on definitions of various community health services, consistent terminology for job titles, consistent data collection, and employer reporting consistency similar to the hospital sector.

The Research Forum was hosted by the Nursing Health Services Research Unit (NHSRU), in co-operation with the Ontario Ministry of Health and Long-Term Care (MOHLTC) Research Unit and the Nursing Secretariat. Participants from the MOHLTC Nursing Secretariat were in attendance.

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