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Health Human Resources Planning: an examination of relationships among nursing service utilization, an estimate of population health and overall health status outcomes in the province of Ontario

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Key Implications for Decision Makers

- ♦ The goal of this study was to develop and test a way to establish, monitor, and predict need for nursing services by using the health needs of the population.
- ♦ This can be done with considerable data manipulation and sophisticated analysis based on the health needs of the population. Population health surveys offer a viable vehicle for both understanding and predicting nursing health human resources when data is linked with use, supply, census, and other data at the public health unit catchment area.
- ♦ Planning for health human resources should be based on the health needs of the population, and needs to consider factors that affect use of healthcare services, including social, political, geographical, technological, and economic factors.
- ♦ The findings suggest that decisions about the deployment of nursing resources are associated with differences in outcomes. Greater intensity of nursing resources is associated with shorter lengths of stay (other things being equal).
- ♦ There was no evidence that greater intensity of nursing resources resulted in poorer patient outcomes as measured by higher rates of readmission, lower levels of patient satisfaction, or lower levels of self reported health. This information is important to both health care managers and health human resource planners in considering the planning and use of health human resources.
- ♦ Use of community and hospital nursing services can be predicted by using factors that indicate need for healthcare services (such as health utility index score, self-rated health status, disability, and chronic conditions). Socioeconomic factors (age, gender, education, income, employment) also influence nursing services use.
- ♦ Although nursing staff is often the easiest thing to cut back on during hard fiscal times, and not always the easiest thing to justify expanding when times get better, increases and decreases in their caregiving has tangible effects for both patients and systems.
- ♦ Populations that have high rates of chronic conditions (such as diabetes or heart disease) and disabilities, and that have high proportions of elderly people, tend to use more nursing services. Decision makers should consider giving more resources to hospitals that serve populations with high levels of chronic conditions and disabilities, as these factors appear to increase the number of overnight hospital stays in those hospitals.
- ♦ Catchment areas for healthcare facilities and providers should be defined in a way that takes account of overlapping service areas and which gives greater weight to the populations that use the facilities more.
- ♦ There needs to be a significant investment in creating and maintaining readily accessible databases that allow us to compare differences between and across jurisdictions to understand the health needs of the population, and to determine whether the system is working in effective and efficient ways to meet these needs. There needs to be more effective ways to access data on healthcare use and factors that influence need for healthcare.

Executive Summary

The goal of this study was to develop and test a way to establish, monitor, and predict need for nursing services by using the health needs of the population. This study explored the relationship between the health needs of Ontarians, their use of community and hospital nursing services, and variations in outcomes.

The findings suggest that decisions about the deployment of nursing resources are associated with differences in outcomes. Greater intensity of nursing resources is associated with shorter lengths of stay (other things being equal). There was no evidence that greater intensity of nursing resources resulted in poorer patient outcomes as measured by higher rates of readmission, lower levels of patient satisfaction, or lower levels of self reported health. This information is important to both healthcare managers and health human resource planners in considering the planning and use of health human resources. These findings emphasize that although nursing staff is often the easiest thing to cut back on during hard fiscal times, and not always the easiest thing to justify expanding when times get better, increases and decreases in their caregiving has tangible effects for both patients and systems. Therefore, greater attention needs to be paid to the mix of inputs: there is no use having more beds, theatres, MRIs, or physicians if we do not have the appropriate number of nurses with which these can be combined to generate optimal service outputs and health outcomes.

When looking at the effect that need for healthcare had on use of overnight hospital services, the study found that population areas with a large elderly population and high rates of severe chronic conditions and disabilities had more overnight hospital stays than areas with lower rates. Therefore, decision makers should consider giving more resources to hospitals that serve populations with high levels of

chronic conditions and disabilities, as these factors appear to increase the number of overnight hospital stays in those hospitals.

The study also looked at variations in hospital mortality, readmission rates, length of stay, and patient satisfaction. It found that the patient severity levels affected in-hospital mortality; the sicker the patient population, the more patient deaths that hospital will have. Areas with less unemployment were also more likely to have high inpatient mortality.

The only factor that affected readmission was education, in that hospitals where the population has more education are less likely to have readmissions than hospitals where there are fewer high school graduates.

The mean relative intensity weight was significant when looking at length of stay — the higher the severity of patient illness in a hospital, the longer the average length of stay. Nursing hours per patient day had a significant negative effect, meaning that the more nursing hours worked on a daily basis in a hospital, the shorter the average length of patient stay in that hospital.

The only variable that affected patient satisfaction was age. The higher the proportion of the hospital catchment area population that is over 65, the higher patients rate their satisfaction with that hospital's unit-based care.

The study's final question looked at the effect use of hospital and community nursing services had on health status. The study found that using more (or fewer) services than average had a statistically significant effect, but that it was not large enough to be practically significant.

Self-reported health status was generally lower for older patients. Females were significantly less likely to report better health than males. Respondents who were unemployed were significantly less likely to report better health than employed respondents. Respondents not living in metropolitan areas were more likely to report better health than respondents living in urban non-metropolitan areas. Lower-middle-, middle-, higher-middle-, and higher-income respondents were all more likely to report better health than lower-income respondents, though in the case of lower-middle-income respondents, the difference was not significant. Those respondents with a university degree were most likely to be healthy, followed by those with a trade school or community college diploma and those with a high school diploma. All three groups of respondents were significantly more likely than respondents without a high school diploma to report better health.

This study suggests that with considerable data manipulation and sophisticated analysis, it is possible to model needs for nursing health human resources based on the health needs of the population. Population health surveys offer a viable vehicle for both understanding and predicting nursing health human resources when data is linked with use, supply, census, and other data at the public health unit catchment area.

The results may be used by policy makers, decision makers, and researchers to help them create effective mechanisms and policies for establishing, monitoring, and predicting the variety of needs for nursing services at the population level. These findings are important to both healthcare managers and health human resources planners in their efforts to deploy efficient mixes of healthcare resources and identify future human resource requirements to support the efficient provision of health human resources. This study also highlights infrastructure and organizational barriers that need to be addressed if health human resources planning is to be conducted in ways that meet the needs of the populations.