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Risk Adjustment for Home Care Quality Indicators in Switzerland

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Introduction

Since 2014, regular reports on 19 quality indicators have been available to Swiss home care organizations to support them in their efforts for quality improvement. However, comparisons of quality indicators between organizations should be interpreted with caution, because these indicators may also be affected by factors other than the quality of services. This problem can be addressed with different methods of risk adjustment of the quality indicators.

It was the purpose of a study funded by the Spitex association Switzerland to develop an easy administrable form of risk adjustment for the home care quality indicators, based on factors measured with RAI-Home-Care Switzerland.

Methods

The concept of indirect standardization was used for risk adjustment of home care quality indicators: the ratio between the observed and the expected indicator was calculated and then multiplied by the crude rate of the indicator in the population (Dalby et al., 2005). The expected rate was determined either with logistic regression to predict the existence of a quality problem on a client level or with linear regression to predict expected levels of indicators on the level of organizations. One of the adjusters on the organizational level was the so called agency intake profile (AIP), defined as the rate of clients already showing the quality problem at admission (Hirdes et al., 2004).

Logistic regression models were calculated with basic control variables as sex and age, together with additional variables showing an association with correlation or phi coefficient of at least 0.1 (Kidder et al., 2002).

Linear regression models were calculated with the AIP and variables for proportions of clients with specific features (e.g. male clients) showing significant correlation of at least 0.1.

Finally, for each indicator the impact of risk adjustment was compared, using the difference between the non-adjusted and the adjusted indicator and differences in the ranking of organizations before and after adjustment.

Results

For 17 of the 19 quality indicators the logistic regression models showed unsatisfying model fitting. The models for the remaining two indicators had a weak explanatory power. Also, models for adjustment on the organizational level did not show a better accuracy of risk adjustment.

With models using client features on an organizational level, only three indicators can be adjusted based on sound regression models.

More promising are models using the AIP: Four indicators can be adjusted with reliable models with good explanatory power, and another four with models with acceptable but somewhat weaker reliability.

If only risk adjustment based on sound regressions were to be used, there would be no possibility for adjustment for eight of the 19 quality indicators.

For most indicators risk adjustment changes the indicator values by one to 3.7 percent points only, while it changes by more than five percent points in four indicators. The median difference in organizational ranking is between two and five ranks.

Conclusion

Not all risk adjustment models have satisfying explanatory power. For eight indicators it is not possible to find any compelling method of risk adjustment. The most accurate method for risk adjustment of home care quality indicators in Switzerland uses the AIP.

All tested methods of risk adjustment have different advantages and disadvantages. Decision-makers will have to weigh these advantages and disadvantages and decide if only one method or different forms of risk adjustment should be used in future quality reports.

Table 1: Accuracy of different forms of risk adjustment

Quality indicator	Client level*	Organizational level*	Agency intake*
Falls	+	++	++
Social isolation with distress	-	++	++
Problems in mouth area	-	-	++
Missing review of medication	-	-	++
Stressed helpers	-	-	+
Inadequate pain control	-	-	+
Dehydration	-	-	+
Negative mood	-	-	+
Decline of independence	-	+	-
Basic activities of daily life	+	-	-
disruptive or intense daily pain	-	-	-
Signs of neglect or abuse	-	-	-
Weight loss	-	-	-
Cognitive decline	-	-	-
Difficulty in communication	-	-	-
Instrumental activities of daily life	-	-	-
Bladder incontinence	-	-	-
Skin ulcers	-	-	-
Locomotion inside home	**	**	**

* Client level: risk adjustment based on logistic regression with client characteristics
* Organizational level: risk adjustment based on linear regression variables for proportions of clients with specific features (e.g. male clients).
* Agency intake: risk adjustment based on linear regression with agency intake profile (AIP)
++ Risk adjustment based on models with good reliability considering explanatory power and model fitting
\+ Risk adjustment based on models with acceptable reliability considering explanatory power and model fitting
\- No risk adjustment possible based on models with satisfying model fitting
** Not jet calculated due to problems with data

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Literature:
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