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Extent and Drivers of temporary nurse deployment in Swiss hospitals

Maryam Ahmadi Shad[1], Nicole Grossmann[1], Sarah N. Musy[1], Florian Liberatore[2], Michael Simon[1]

[1]University of Basel, Institute of Nursing Science, Department Public Health, Basel, Switzerland [2] Winterthur Institute of Health Economics, Zurich University of Applied Sciences, Winterthur, Switzerland

Introduction

Hospitals can bridge the unforeseeable variations in nurse staffing by calling in temporary nurses whether from internal float pool, external agencies, or other units.

Aim and Methods

The aim is to describe the extent and shift patterns of temporary nurse deployments and investigate if it is driven by the bed occupancy affecting the demand or/and absences relating to the supply.

A time-series analysis was conducted in three hospitals (12 units) in German-speaking part of Switzerland from January to April, 2022. Staffing data contained the number of present and absent staff (short-term and long-term), the number of patients, admissions, discharges, and transfers in and out per unit per shift.

Results

- A total of 4,659 shifts were analyzed across three hospitals. Temporary Registered Nurses (RNs) were used most frequently in Hospital 1, where they covered **42% of shifts**, and least frequently in Hospital 3, where they accounted for only **7% of shifts**.
- Hospital 1 had the **highest proportion of temporary RNs to the overall staff (17.6%),** followed closely by Hospital 2 (14.8%). In contrast, Hospital 3 had a much lower proportion at just 2.8%.
- Across hospitals, temporary RNs were most frequently deployed in **Day and Afternoon shifts**. These shifts also showed the highest reliance, with temporary RNs making up 17.6% and 18.9% of overall staffing, particularly in Hospital 1.

Drivers of temporary RN deployment

According to multilevel negative binomial regression model:

- A higher proportion of absent RNs was associated with no meaningful change in the number of temporary RNs (IRR = 1.00, CI= (0.99 – 1.00)).
- Higher occupancy rates tended to be associated with a slight increase in the number of temporary RNs (IRR = 1.00, CI= (1.00 – 1.01)).
- Neither occupancy rate nor absence rate were statistically significant predictors (p>0.05).
- The marginal R^2 was low (0.004) explaining a small variability.

Number of RN staff by employment sources in hospital 1 (as a sample hospital with more temporary RNs)

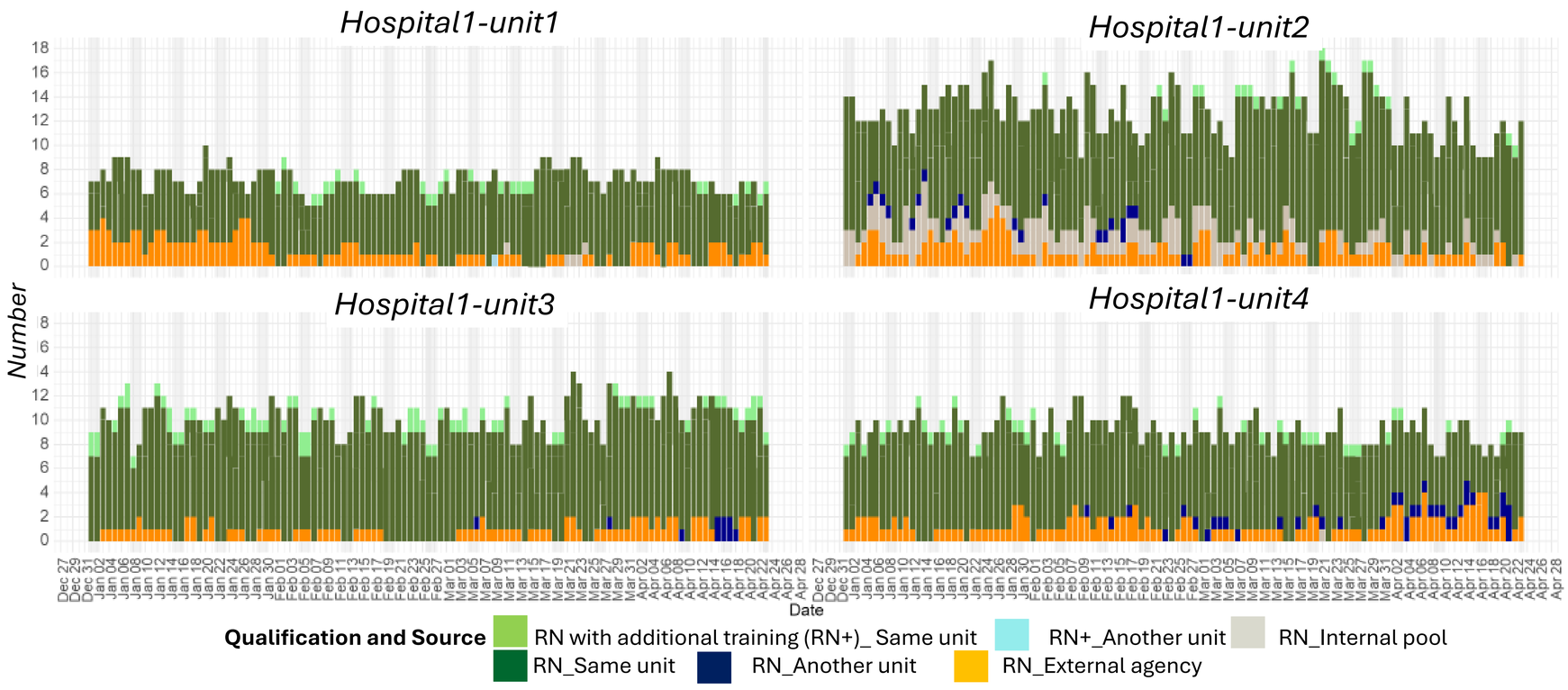

Table 1: Proportion of Temporary RNs to the overall number of RNs, across occupancy levels

	Use of temporary RN		
Occupancy level	Hospital1	Hospital2	Hospital3
Above average	212/1077 (19.7%)	113/737 (15.3%)	21/653 (3.2%)
Average	462/2701 (17.1%)	333/2294 (14.5%)	73/2279 (3.2%)
Below average	119/697 (17.1%)	102/604 (16.9%)	16/810 (2.0%)

Table 2: Proportion of Temporary RNs to the overall number of RNs, across day with and without absences

	Use of temporary RN		
Absence	Hospital1	Hospital2	Hospital3
Day with no RN absent	269/1299 (20.7%)	229/1783 (12.8%)	34/1310 (2.6%)
Day with RN absent	524/3176 (16.5%)	319/1852 (17.2%)	76/2432 (3.1%)

Conclusion

Although temporary RNs are frequently deployed, they account for rather a small proportion of the overall staff. Their deployment is not aligned with fluctuations in demand or shortages in supply. A substantial proportion of the variation in the use of temporary RNs can be attributed to organizational factors rather than staffing needs.