RESEARCH ARTICLE

The quality effects of agency staffing in residential aged care

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Abstract

Objectives: In Australia, temporary agency workers are a relatively small but enduring component of the residential aged care workforce. However, evidence from other countries suggests reliance on agency workers has a detrimental effect on the quality of care (QoC). We examined whether QoC outcomes differ for Australian residential aged care facilities (RACFs) based on their reliance on agency care staff.

Methods: A retrospective observational study was conducted using de-identified datasets obtained under the legal authority of the Royal Commission into Aged Care Quality and Safety. Regression analysis was conducted using data comprising 6221 RACF-year observations, across 5 years (2015–2019), from 1709 unique RACFs in Australia.

Results: After controlling for other determinants of QoC, RACFs with a greater reliance on agency care staff have poorer QoC outcomes, with significantly higher rates of complaints, missing persons, reportable assaults, hospitalisations, and accreditation flags.

Conclusions: Consistent with international evidence, we found that the QoC of Australian RACFs is sensitive to the reliance on agency staff in delivering direct care to residents. These findings illustrate the importance of workers' employment conditions, alongside other workforce characteristics, in driving the quality of residential aged care.

KEYWORDS
health workforce, nursing staff, quality of health care, residential facilities

1 | INTRODUCTION

In residential aged care, the characteristics and composition of the direct care workforce are primary drivers of quality of care (QoC).[1] As such, it is unsurprising that workforce issues were highlighted as a central cause of substandard care by the recent Royal Commission into Aged Care Quality and Safety (RCACQS).[2] Several of these issues have subsequently been targeted for reform through minimum staffing standards, recruitment and

retention incentives and staff qualifications and training improvements.[3] However, one dimension of the workforce that appears to have escaped policymakers' attention is providers' reliance on externally contracted, temporary 'agency' care workers.

1.1 | Agency staffing in Australian residential aged care

Within Australia, temporary agency workers comprise a relatively small but enduring component of the aged care workforce. According to the 2016 Aged Care Workforce Census, agency workers represent approximately 9% of all direct care workers within residential care (i.e. registered nurses, enrolled nurses, personal care attendants and allied health professionals), with 41% of residential aged care facilities (RACFs) engaging agency care workers at some point.[4]

Agency staff operate under a distinctive, triangular employment arrangement, where an external agency pays staff to work within an aged care provider organisation, which pays a contract fee to the agency.[5] This arrangement can help providers address short-term labour shortages, with empirical findings indicating that the use of agency workers is positively associated with both the number and length of vacancies and reported skill shortages.[6] This use of agency workers has been characterised as a deliberate, targeted strategy to supplement, rather than substitute, permanent employees.[6]

1.2 | Agency staffing and quality of care

While the COVID-19 pandemic has drawn attention to the risk of disease spread through temporary staff working across multiple sites,[7] agency staffing may create more fundamental problems in delivering high-quality care. As agency staff works on an intermittent basis, it can be challenging to ensure continuity of care, deliver person-centred care or establish familiarity with residents, which can be disruptive and distressing for residents and their families.[8] In a recent survey of Australian residential aged care recipients, 13% of respondents reported a concern that 'agency staff do not know me and my needs' (p. 54).[9] In addition, as agency staff often lack knowledge of provider-specific procedures and resources, they tend to be less efficient and require more supervision,[10] which can negatively impact job satisfaction, stress and retention of permanent care workers.[5]

Although robust evidence about the effects of agency staffing in Australian residential care is scarce, studies elsewhere show that agency staffing has a detrimental

> **Policy Impact**
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> In the wake of the Royal Commission, workforce is one of the five pillars of the aged care reform agenda. While much attention has focused on improving staffing levels and skills, the employment conditions of care workers also have significant implications for the quality of care.
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> **Practice Impact**
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> To improve the quality of residential care, providers could consider adopting organisational strategies for mitigating the detrimental effects of agency staffing.

influence on QoC. Prior research shows that facilities with a greater reliance on agency care staff have higher rates of deficiency citations[11] and physical restraint use,[12] and other poorer QoC outcomes.[8,13] These findings echo those in acute care and hospital settings.[14–16] A conspicuous feature of prior findings is the sensitivity of QoC to seemingly low agency staffing levels, with significant effects found when agency staffing is only 5% of direct care time.[11]

1.3 | Objective

Despite concerns about relying on agency staff, there is a lack of robust empirical evidence about the effects on QoC outcomes in the Australian residential care setting. Accordingly, this study aimed to examine whether QoC outcomes differ for Australian RACFs based on their reliance on agency care staff.

2 | METHODS

2.1 | Study design, data sources and sample

This study used retrospective panel analysis to examine the influence of agency staffing on QoC outcomes for a sample comprising Australian RACFs for a 5-year period (2015–2019) across all states and territories. Similar to previous studies,[11] we conducted a multivariate analysis, using regression with fixed effects to control for unique RACFs, to investigate whether QoC outcomes are associated with differences in the proportion of agency staffing after controlling for other RACF characteristics.

The study drew on datasets obtained under the legal authority of the RCACQS, provided to the research team

in a de-identified form linked at the facility level.[2] Data on workforce characteristics were obtained from industry benchmarking surveys administered by StewartBrown and the RCACQS.[17] For QoC, data about complaints and accreditation were obtained from the Aged Care Quality and Safety Commission (ACQSC); missing person and reportable assault data from the Department of Health; and hospitalisation data from the RCACQS, based on indicators developed by the Registry of Senior Australians.[18] Data about RACFs' case mix were obtained from the Australian Health Services Research Institute, based on their mapping of the Aged Care Funding Instrument to the Australian National Aged Care Classification.[19] Local unemployment rates were obtained from the Australian Bureau of Statistics.[20] All remaining information about the RACF characteristics was obtained from the Department of Health. The datasets were reviewed and verified against sector-level statistics.[21] The sample comprised 6221 RACF-year observations (1709 unique RACFs) with available facility and workforce data, which represents 47% of all Australian RACF-years during the sample period and 63% of unique Australian RACFs in 2019.[22] Compared with the population, our sample of RACFs were, on average, larger (i.e. had more beds), based in major cities and run by for-profit providers.

2.2 | Quality-of-care (QoC) variables

Five annualised RACF-level measures were used to capture different dimensions of QoC. These variables measure QoC as perceived by residents (*Complaints*), as realised in care breaches (*Missing persons*, *Reportable assaults* and *Hospitalisations*) and as detected by regulators during quality accreditation inspections (*Accreditation flags*). The five outcome measures are defined below.

Complaints[23] are the number of issues reported to the ACQSC relating to workforce, measured as a rate per 100 long-term residents (LTRs). We classified workforce-related issues based on complaint codes assigned by the ACQSC, including issues coded as: Choice and Dignity, Consultation and Communication, Falls and Fall Prevention, Health and Personal Care, Health Care, Medication Management, Personal Care, Personal Property, Personnel, Physical Environment, Respite, Restraint, Specified Care and Services and Staffing.

Missing persons are the number of LTRs reported as missing per 100 LTRs. *Reportable assaults* are the number of reportable assaults of residents per 100 LTRs. *Hospitalisations* are the case-mix-adjusted facility rate of potentially avoidable hospitalisations or emergency department presentations.[24] This includes those caused by falls, fractures, adverse medication events, dementia and delirium, pressure injuries, unexpected weight loss and emergency department presentations after reentry.[18]

Accreditation flags[25] are the number of unmet quality standards outcomes, identified in accreditation inspections conducted by the ACQSC. As accreditation inspections occur periodically (once every 2–3 years) for this variable, we restricted the sample to RACF-years where accreditation inspections were conducted.

2.3 | Research design

Univariate analysis, using Pearson's correlations, was used to examine the association between the QoC outcomes and reliance on agency care staff, measured as the proportion of total direct care time provided by agency staff. In addition, following prior studies, bivariate analysis was used to compare the QoC outcomes of RACFs designated as having high (low) reliance on agency staff above (below) the 5% threshold of total direct care time.[11]

Multivariate OLS regression analysis was conducted to examine the effect of agency staffing on QoC outcomes and control for other determinants of QoC. Fixed effects were included for unique RACFs and years to account for time-invariant RACF characteristics and year-specific effects respectively. The following model was specified for each facility *i* in year *t*:

$$QoC_{i,t} = \beta_1 Agency\%_{i,t} + Controls_{i,t,\gamma} + \varepsilon_{i,t}.$$

QoC refers to the five quality-of-care variables described in Section 2.2. The key independent variable of interest is the reliance on agency care staff (*Agency %*), measured as the proportion of total direct care time (normal and overtime) supplied by agency staff. *Control* denotes a vector of control variables measured at an RACF, year and Aged Care Planning Region (ACPR) (γ) level and included: direct care hours (*Total HPRD*), the proportion of direct care provided by registered and enrolled nurses (*RN EN %*), RACF size (*Occupied beds*), case-mix index (*Casemix index*) and the proportion of residents with dementia (*Dementia %*). Competition among RACFs in each ACPR (*Competition*) and local rates of unemployment (*Unemployment*) were included to control for the influence of local market effects.[7] The application of the fixed effects model controls for time-invariant characteristics of each RACF, including ownership structure (i.e. for-profit, non-profit or government), chain affiliation and location (i.e. metropolitan, regional or rural). Detailed variable descriptions are provided in Table 1.

This study and the related use of confidential data have been approved by the Human Research Ethics Committee

3 | RESULTS

3.1 | Descriptive statistics

Table 2 presents the sample descriptive statistics and the univariate and bivariate analysis results. The Pearson's correlation results show that *Agency %* is positive and significantly correlated with QoC variables, consistent with the detrimental impact of agency staff on QoC outcomes. This is supported by the bivariate results, which show that RACFs with high agency staffing (5% or more of total direct care time) have poorer QoC outcomes than RACFs with low agency staffing (<5%). High agency RACFs have significantly more complaint issues (1.16 per 100 LTRs), missing persons (0.15 per 100 LTRs), reportable assaults (0.45 per 100 LTRs), hospitalisations (7%) and accreditation flags (0.34).

3.2 | Multivariate analysis

The results of the multivariate analysis are presented in Table 3, which reports the associations between five QoC outcomes and reliance on agency care staff. After controlling for other workforce (total care hours, reliance on registered and enrolled nurses), organisational (RACF size, case-mix index and proportion of residents with dementia) and market factors (competition and local unemployment), RACFs with a greater reliance on agency care staff have worse QoC outcomes. Specifically, we find that the proportion of direct care provided by agency staff is associated with significantly higher rates of complaints, missing persons, reported assaults, hospitalisations and accreditation flags. Regarding other workforce characteristics, the reliance on registered and enrolled nurses is associated with lower rates of assaults and hospitalisations, while total direct care time is not significantly associated with any of the QoC indicators. The effects of the other controls vary by QoC indicator; however, they generally show that larger RACFs have poorer quality outcomes.

TABLE 1 Description of dependent and independent variables used in analysis.

Variable	Description
Dependent variables	
Complaints	Number of complaint issues related to workforce issues, per 100 residents
Missing persons	Number of reportable incidents of missing persons, per 100 residents
Reportable assaults	Number of reportable assaults, per 100 residents
Hospitalisations	Casemix-adjusted rate of potentially avoidable hospitalisations or emergency department presentations, relating to falls, fractures, adverse medication events, dementia and delirium, pressure injuries, unexpected weight loss and emergency department presentations after reentry
Accreditation flags	Number of standards not met during accreditation inspection
Independent variables	
Staffing characteristics	
Agency %	Proportion of direct care hours provided by agency staff
Total HPRD	Total direct care hours, per resident per day
RN EN %	Proportion of direct care provided by registered or enrolled nurse
Organisational characteristics	
Occupied beds	Standardisation of the average occupied beds per RACF per year
Casemix index	The average cost of care per resident day based on the resident casemix.[24]
Dementia %	Proportion of RACF residents with dementia
Market characteristics	
Competition	Herfindahl Index, the sum of each RACF's squared percentage share of beds in the Aged Care Planning Region (ACPR), for all RACFs in the Aged Care Planning Region (ACPR)
Unemployment	Average annual unemployment rate for the Aged Care Planning Region (ACPR) of the RACF

Note: Table provides descriptions of all variables used in the analysis. Data were obtained from the Australian Royal Commission into the Quality and Safety in Aged Care (RCACQS).

TABLE 2 Univariate analysis comparing QoC outcomes of RACFs with high and low agency staffing.

| | All facilities | | | Pearson's correlation | Comparison of high and low agency staffing[a] | | | | |
| | | | | | High agency staffing | | Low agency staffing | | Stat diff. |
	Obs.	Mean	Std. dev.	Agency %	Obs.	Mean	Obs.	Mean	p-Value
Quality-of-care (QoC) outcomes									
Complaints	6221	3.39	5.17	0.10*	1453	4.28	4768	3.12	<0.001*
Missing persons	6221	0.58	1.18	0.10*	1453	0.70	4768	0.55	<0.001*
Reportable assaults	6221	1.72	2.25	0.11*	1453	2.06	4768	1.61	<0.001*
Hospitalisations	6221	6.41	2.77	0.09*	1453	6.87	4768	6.27	<0.001*
Accreditation flags	2328	0.60	2.10	0.07*	563	0.85	1765	0.52	<0.001*
Workforce characteristics									
Agency %	6221	0.03	0.03	1.00	1453	0.07	4768	0.02	<0.001*
Total HPRD	6221	3.03	0.58	−0.01	1453	3.00	4768	3.03	0.040*
RN EN %	6221	0.23	0.14	−0.05*	1453	0.22	4768	0.24	<0.001*
Other characteristics									
Number of occupied bed days ('000)[b]	6221	27.87	13.30	0.13*	1453	29.82	4768	27.28	<0.001*
Occupied beds	6221	0.00	1.00	0.12*	1453	0.15	4768	−0.04	<0.001*
Casemix index	6221	1.04	0.16	0.02	1453	1.03	4768	1.04	0.050*
Dementia %	6221	0.52	0.14	−0.01	1453	0.52	4768	0.53	0.125
Competition	6221	0.06	0.06	−0.13*	1453	0.05	4768	0.06	<0.001*
Unemployment	6221	5.66	1.44	−0.00	1453	5.64	4768	5.67	0.492

Note: Table presents the results of univariate and bivariate analysis for the level of direct care provided by agency staff. Data were obtained from the Australian Royal Commission into Aged Care Quality and Safety (RCACQS).

Abbreviations: Max., maximum; Min., minimum; Obs., observations; Stat diff., statistical differences using *t*-tests; Std. dev., standard deviation.

[a]Agency staffing levels provide the results of the comparison of between quality-of-care measures and high and low agency staffing levels, with high (low) agency staffing levels measured as 5% or greater (less than 5%) of direct care provided by agency staff.

[b]Raw measure of occupied beds prior to standardisation. The results of differences in means using Student *t*-tests between high and low agency staff samples are reported under Stat diff. Refer to Table 1 for variable definitions.

*Significance at 5% ($p < 0.05$).

3.3 | Additional analysis

Additional analyses were run to ascertain the robustness of the findings. First, as discussed earlier, RACFs in the sample differed from the population in terms of size, location and ownership. To ensure the results were not driven by attrition, the main analyses were repeated after weighting the sample by population characteristics (size, location and ownership) through stratification. The results remained qualitatively and statistically unchanged.

Second, as not all RACFs included in the sample employed agency staff during the year, the results could be driven by the decision of RACFs to use agency staff. Accordingly, the main analysis was rerun after excluding RACFs with no agency staff employed, resulting in a reduced sample comprising 71% of the original sample ($n = 4386$). The results remained similar to the main analyses concerning the inferences drawn qualitatively

and statistically, showing RACFs with a greater reliance on agency care staff as having higher rates (i.e. worse) of complaints, missing persons, reportable assaults, hospitalisations and accreditation flags.

Third, as prior studies document a non-linear effect of agency staff on QoC outcomes,[13] we reran the analyses, including an additional quadratic function for agency staffing (agency staffing squared) to capture any non-linearity. We did not find evidence of a non-linear association between agency staffing and QoC outcomes, with the analyses documenting only a linear association between agency staffing and QoC outcomes.

Finally, as QoC variables may be correlated, analyses were conducted to consider whether the association between *Agency %* and QoC variables vary significantly. The correlations between QoC variables were positive and significant ($p < 0.05$), although all correlations were <0.3. Analyses using MANOVA and multivariate multiple

TABLE 3 Regression analysis examining agency staffing and QoC outcomes.

Variables	(1) Complaints	(2) Missing persons	(3) Reportable assaults	(4) Hospitalizations	(5) Accreditation flags
Agency %	17.09*	2.40*	7.80*	4.00*	14.17*
	(5.80 to 28.39)	(0.69 to 4.11)	(3.97 to 11.64)	(0.17 to 7.83)	(1.79 to 26.54)
	0.003	0.006	<0.001	0.041	0.025
Total HPRD	−0.09	−0.00	0.14	−0.15	0.36
	(−0.77 to 0.59)	(−0.09 to 0.09)	(−0.07 to 0.35)	(−0.43 to 0.13)	(−0.15 to 0.87)
	0.795	0.942	0.182	0.291	0.164
RN EN %	−1.02	−0.08	−0.46	−0.89	−0.77
	(−2.37 to 0.32)	(−0.29 to 0.13)	(−0.93 to 0.02)	(−1.88 to 0.09)	(−1.98 to 0.44)
	0.135	0.473	0.059	0.075	0.213
Occupied beds	0.19	0.13*	0.79*	0.82*	0.42
	(−0.48 to 0.87)	(0.01 to 0.25)	(0.52 to 1.07)	(0.54 to 1.11)	(−0.07 to 0.92)
	0.571	0.039	<0.001	<0.001	0.092
Casemix index	0.95	−0.48**	−0.44	0.22	−2.58*
	(−1.28 to 3.17)	(−0.84 to −0.12)	(−1.31 to 0.42)	(−0.79 to 1.23)	(−4.38 to −0.78)
	0.405	0.009	0.312	0.672	0.005
Dementia %	−1.78	0.05	0.29	−0.16	0.68
	(−4.46 to 0.89)	(−0.38 to 0.48)	(−0.63 to 1.22)	(−1.30 to 0.99)	(−1.31 to 2.66)
	0.191	0.809	0.532	0.789	0.503
Competition	−2.18	0.07	−0.97	−3.99*	−3.37
	(−7.00 to 2.63)	(−0.96 to 1.10)	(−2.88 to 0.93)	(−6.27 to −1.71)	(−8.29 to 1.56)
	0.374	0.894	0.317	<0.001	0.180
Unemployment	−0.15	−0.01	−0.14*	0.02	0.10
	(−0.40 to 0.11)	(−0.05 to 0.03)	(−0.24 to −0.05)	(−0.08 to 0.11)	(−0.16 to 0.36)
	0.270	0.635	0.002	0.715	0.460
Constant	3.91*	0.98*	2.09*	6.76*	0.88
	(0.42 to 7.40)	(0.39 to 1.56)	(0.90 to 3.28)	(5.40 to 8.12)	(−1.46 to 3.22)
	0.028	0.001	<0.001	<0.001	0.462
Observations	6221	6221	6221	6221	2328
RACF fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Unique RACFs	1709	1709	1709	1709	1532
Adjusted R^2	0.03	0.04	0.15	0.03	0.05

Note: Table presents the results of regression analyses with fixed effects by unique Residential Aged Care Facility (RACF) and year. Data were obtained from the Australian Royal Commission into the Quality and Safety in Aged Care (RCACQS). Coefficient estimates with a star (*) denoting significance at 5% ($p < 0.05$) are presented in each column with confidence intervals (2.5th–97.5th percentiles) provided in the parentheses followed by *p*-values below. Refer to Table 1 for variable definitions.

regressions to account for correlations between dependent variables, on the reduced sample to include *Accreditation flags* (n = 2328), showed that *Agency %* was significant across each model, and yielded statistically and qualitatively similar findings to the main analyses. When evaluating whether the effect of *Agency %* differed between models where the dependent variables had the largest correlations, we found *Agency %* differed for all models with different QoC variables tested with the exception of

Accreditation flags and *Reportable assaults* which were not significantly different for the sub-sample.

4 | DISCUSSION

This study provides empirical evidence of a negative association between reliance on agency care staff and the QoC delivered by Australian RACFs. This result holds across

a range of available QoC indicators measuring quality in different domains, including consumer perceptions, realised care breaches and regulatory assessments. These findings align with prior evidence about agency staffing in other countries[8,11–13] and other care settings.[14–16] The sensitivity of these indicators substantiates previous concerns about relying on temporary staff who may lack familiarity with residents, particularly those with more complex and personalised needs.[9]

4.1 | Implications for policy

In the wake of the Royal Commission, the workforce is one of the five pillars of the reform agenda aimed at improving the quality of aged care. While much attention has focused on improving staffing levels and skills, our results suggested that the employment conditions of care workers are also a critical issue. As such, the workforce reform agenda could be expanded to consider the potential quality implications of agency staffing, particularly if conditions within aged care labour markets push providers to expand their reliance on these types of care workers. Workforce shortages – a key driver of agency staffing – are already a perennial challenge within the sector and are expected to continue in the next decade.[4,26] In the near term, staffing shortages are likely to be exacerbated as providers attempt to increase staffing levels to meet the incoming mandatory minimum standards,[27] while managing the workforce demands and disruptions from the COVID-19 pandemic.[28] Another reform that may alter providers' workforce models is the windup of the Aged Care Approval Round programme ('bed licenses') in 2024.[29] Residential places will be assigned directly to consumers, who will have more flexibility to switch providers.[30] From a provider's perspective, any increase in the variability of occupancy rates may lead to an increased use of temporary workers to adjust to fluctuations in demand.

If policymakers wanted to curb agency staffing, they could consider direct interventions, such as imposing mandatory caps on agency staffing or ring-fencing subsidies for permanent employee wages. However, given that agency workers are often used to fill short-term staffing gaps, these measures would need to be sufficiently flexible to accommodate fluctuations in local labour markets.[11] Regulators would need to be mindful of how an agency staffing cap may operate alongside existing staffing regulations. For example, prior studies show that both minimum standards and laws restricting overtime cause increases in the use of contract care staffing, which suggests that overly restrictive caps may threaten operational flexibility. In the context of labour shortages, the use of agency staff will likely be preferable to reductions in total care hours. As an alternative, policymakers could seek to induce providers to limit their use of temporary staff by using market-based incentives, such as including staffing rates within publicly accessible quality rating systems.

4.2 | Implications for practice

From providers' perspectives, our results suggest that quality of care may be enhanced by restricting reliance on agency care staff. This may be accomplished through practices that enhance the recruitment, retention and skill development of permanent employees, and improve the planning and rostering of staff.

However, as agency staffing may be unavoidable, providers may also consider operational strategies for mitigating any detrimental effects on quality. These could include sourcing processes with agencies that ensure proper matching of workers to the needs of individual facilities[15] and the regular use of the same staff to improve continuity of care for residents. Another potential strategy is to use more comprehensive and systematic orientation programmes that build familiarity with institutional processes, clarify role expectations and reduce the supervision burden on permanent staff.[16] Providers could also improve the communication and teamwork within care teams comprising both internal and external staff through leadership training of team leaders,[15] the inclusion of agency staff within training programmes[5] and reliable client information systems and handover procedures.

4.3 | Strengths and limitations

Our findings should be interpreted with the following strengths and limitations in mind. The study is observational, so causal inference does not follow. In other words, while agency staffing is associated with lower QoC, it is not possible to infer that agency use causes poor quality. For example, poor quality may cause staff turnover, necessitating agency staff. In addition, the study was able to draw on a broad, unique longitudinal dataset made available by the RCACQS, permitting the fixed-effect approach to control for time-invariant RACF characteristics. However, the workforce datasets were provided to the research team as annual averages, which may underestimate the variation in the actual staffing characteristics, both at a resident and RACF level. Also, the dataset did not allow us to examine agency worker characteristics, such as role, experience or tenure, which may have varied influences on QoC. Finally, we could not differentiate between a range of employment types commonly found in RACFs, including agency, float, bank, casual and full-time

employees. These different employment categories may confound or attenuate the results reported and thus warrant further exploration.

5 | CONCLUSIONS

The Royal Commission into Aged Care Quality and Safety raised important issues about the composition of the care workforce within Australian RACFs, which have subsequently been addressed by reforms to improve the number and skill level of direct care staff. However, there has been limited consideration of the employment status of care workers, despite evidence from overseas and acute settings that quality can be highly sensitive to the use of temporary workers. Consistent with this prior work, we find that RACFs with a greater reliance on agency care staff have poorer quality, as perceived by residents, realised in reported outcomes and identified by regulators in compliance with quality standards. These findings illustrate the importance of workers' employment conditions, alongside other workforce characteristics, in driving the quality of residential aged care. In recognising that agency staffing may be necessary to fulfil temporary skill shortages, future research could explore the potential trade-offs between using temporary workers versus staffing shortfalls on quality-of-care outcomes.

CONFLICTS OF INTEREST
No conflicts of interest declared.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study were supplied from the Royal Commission into Aged Care Quality and Safety. Restrictions apply to the availability of these data, which were used under license for this study.

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