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Factors associated with educational mobility in mid-age Australian women

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Highlights

- We analysed the baseline socio-economic position (SEP) and health factors associated with obtaining further education in 4113 mid-age Australian women between 1996 and 2010.
- Women either unemployed or working part-time at baseline had higher odds of a stable low and middle education over time versus educational mobility.
- Apart from obesity, characteristics that may signal an unhealthy lifestyle in early mid-life were not useful indicators of women's future educational mobility.

ABSTRACT

The educational mobility of mid-age women is rarely studied. We analysed the baseline socio-economic position (SEP) and health factors associated with obtaining further education in 4113 mid-age Australian women between 1996 and 2010 (aged 45-50 at baseline, 62-67 at follow-up) from a population-based study. Women either unemployed or working part-time at baseline had higher odds of a stable low and middle education over time (ORs ranging from 1.61 to 3.86) versus educational mobility. Apart from obesity, characteristics that may signal an unhealthy lifestyle in early mid-life were not useful indicators of women's future educational mobility.

KEYWORDS: Education; middle-aged; social mobility; women; risk factors.

1.1 INTRODUCTION

Educational attainment is a key social determinant of mortality and health indicators for women [1,2], and their children [3]. Although women are increasingly educationally mobile, this mobility by mid-age women is rarely studied. While participation in education is most prevalent in the first two decades of life, in Australia between 2001-2012, participation in education by women aged 45-64 years showed a steady increase from 9 to 12% [4]. Using data from the Australian Household Income and Labour Dynamics Study from 2001-2010, Chesters [5] found that women aged 45-54 years were more likely than similarly aged men to be educationally mobile, but were less likely to be so if unemployed. Limited knowledge about other lifestyle or demographic characteristics associated with educational mobility restricts the ability to promote policy initiatives to facilitate women's educational mobility in mid-life. We aimed to identify the baseline socio-economic position (SEP) and lifestyle factors associated with obtaining further education in a population-based study of mid-age Australian women.

2.1 METHODS

Data were from the Australian Longitudinal Study on Women's Health (alswh.org.au) which has followed 13,715 women (recruited in 1996 when aged 45-50, Survey 1) until 2013 when aged 62-67 years (Survey 7). Over this time the women have been surveyed every three years. Highest education was asked only at Survey 1 and Survey 6, and recorded as low (<10 school years), middle (10-12 school years, Trade, Apprenticeship) or high (Certificate, Diploma, Degree or higher). Between Surveys 1 and 6 women were categorised as showing no further education, that is being stable at a low, middle or high level, and further education upwards from a low or middle level. Baseline SEP and lifestyle exposure variables were labour force participation, country of birth, area of residence, and living arrangements, body

mass index (BMI), alcohol consumption, smoking, physical activity, physical and mental health and being a caregiver. All data were self-report. The ALSWH has ethical approval from ethics committees at the Universities of Queensland and Newcastle in Australia. Informed consent was obtained at every survey and data were de-identified before analysis.

2.1.1 Statistical analysis

Bivariable multinomial regression was used to analyse the association of each baseline SEP/lifestyle factor and further education between 1996-2010. This was followed by fully adjusted multinomial regression including all baseline exposures. 'Further education' was chosen as the reference category to aid interpretation. The independence of irrelevant associations assumption for multinomial logistic regression was met. Analysis of missing data patterns, and sensitivity analysis using multiple imputation of the outcome were performed. Data were analysed using SAS 9.3 (SAS Institute Inc., Cary, NC, USA).

3.1 RESULTS

All six surveys were completed by 8,453 women. As the aim was to investigate the association of baseline exposures with obtaining further education, women already at the highest education level at Survey 1 (who could not show further educational mobility) were excluded (n=2680), leaving 5773 cases for analysis. Of these, 4,117 had complete data on all exposures and the outcome (online Figure). Women who remained at a stable low (n=609) or middle (n=2,805) level were compared to those who achieved further education (n=703).

Table 1 shows unadjusted and fully adjusted odds ratios for exposures associated with further education. Baseline SEP exposures associated with further education after adjustments were labour force participation, living arrangements and country of birth; lifestyle exposures were BMI and smoking. Sensitivity analysis confirmed the results with attenuated estimates for labour force participation (online Table). Exposures that only became important in adjusted

analyses (alcohol consumption, caregiving) were likely influenced by confounding and not further reported. Missing data analysis showed women who completed all 6 surveys were generally of higher SEP and had more healthy lifestyle characteristics compared to women who did not. Further analysis of women with complete data on all exposures and outcome compared to those with missing revealed only minor SEP or lifestyle differences (online Figure).

4.1 DISCUSSION

The results for employment support those by Chesters [5]: compared to those gaining further education, unemployed women or those who worked part-time (versus full-time) at baseline had higher odds of a stable low and middle education over time (ORs ranging from 1.61-3.86). We showed similar patterns for women who were obese (versus BMI <25) and who lived with adults (versus adults and children) at baseline. Additionally, women smokers/ex-smokers (versus non-smokers) had lower odds of a stable middle education over time compared with gaining further education. Women with a stable low education did not differ at baseline from those who showed educational mobility on any unhealthy lifestyle characteristic except for obesity. Thus, apart from the finding for obesity, which has also been found by others (for example, in 19-40 years olds [6]), characteristics that may signal an unhealthy lifestyle in early mid-life may not be useful indicators of women's future educational mobility. This is worth comment as previous research demonstrates fairly consistent associations between poor SEP and unhealthy behaviours [7]. A limitation is that we do not know whether the women with unhealthy behaviours at mid-life also had them when they were younger and if these behaviours were associated with prior lower educational attainment (however at baseline, unhealthy characteristics-obesity, smoking and physical inactivity were strongly associated with lower educational levels). A health selection hypothesis would suggest that this association should continue into later mid-age, which,

except for obesity, it did not appear to. Differences by ethnicity suggested that women born in the United Kingdom or New Zealand (versus Australia) showed lower odds of a stable middle education compared with obtaining further education. This may reflect a migration effect: migrants to Australia have a high participation rate in further education [8]. Baseline caregiving status, urban or rural residence and mental and physical health were not associated with further education. Further examination of these associations across different sub-groups and life course stages would be of interest, particularly in younger women, who have had less time for entrenched unhealthy habits such as smoking and physical inactivity, to have occurred. Possibly, healthy lifestyle interventions, for example on smoking or obesity, targeted earlier in the life course may also benefit educational mobility as well as health outcomes [9].

Contributors

LRT contributed to the design, acquisition, analysis and interpretation of data, drafted and reviewed the short communication and approved the final version.

GDM contributed to the design, acquisition, analysis and interpretation of data, assisted with drafting the communication, reviewed the short communication and approved the final version.

Conflict of interest

The authors have no conflict of interest to declare.

Leigh R Tooth declares no conflict of interest.

Gita D Mishra declares no conflict of interest.

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Ethical approval

Ethical approval for the Australian Longitudinal Study on Women's Health (ALSWH) was obtained from the Human Research Ethics Committees of the University of Newcastle and the University of Queensland.

Provenance and peer review

This article has undergone peer review.

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Table 1. Odds of Not Showing Further Educational Attainment in 4,117 Mid-aged Australian Women in the Australian Longitudinal Study on Women's Health, 1996-2010.

	Educational attainment								
	Stable low, N=609			Stable middle, N=2,805				Further education ^b , N=703	
	Unadjusted OR	95% CI	Fully adjusted OR	95% CI	Unadjusted OR	95% CI	Fully adjusted OR	95% CI	
Labour force									
Not in labour force	3.51	2.71, 4.55	3.86	2.86, 5.19	1.37	1.12, 1.69	1.61	1.28, 2.03	Reference
Part-time	1.34	1.04, 1.73	1.41	1.06, 1.88	1.11	0.93, 1.33	1.19	0.98, 1.45	Reference
Birth country ^a									
Europe/Asia/other	1.24	0.87, 1.77	1.34	0.87, 2.07	0.82	0.62, 1.09	0.89	0.63, 1.27	Reference
Other ESB	1.06	0.82, 1.37	1.16	0.86, 1.56	0.59	0.48, 0.73	0.57	0.45 0.72	Reference
Area of residence									
Major city	0.79	0.62, 1.01	0.89	0.66, 1.19	0.99	0.83, 1.21	1.14	0.92, 1.42	Reference
Inner regional	0.91	0.72, 1.14	0.91	0.69, 1.21	1.09	0.91, 1.31	1.15	0.93, 1.42	Reference
Living arrangements									
Live alone	0.76	0.51, 1.14	0.82	0.52, 1.31	0.82	0.62, 1.10	0.96	0.69, 1.32	Reference
Live with adults	1.29	1.04, 1.59	1.37	1.06, 1.76	1.20	1.02, 1.42	1.24	1.02, 1.51	Reference

		1.59						1.51	
Live with children	0.88	0.59, 1.28	0.89	0.58, 1.37	0.79	0.59, 1.07	0.86	0.62, 1.18	Reference
Body mass index									
Obese	1.85	1.44, 2.37	1.44	1.08, 1.93	0.98	0.80, 1.20	0.96	0.76, 1.21	Reference
Overweight	1.34	1.07, 1.68	1.15	0.89, 1.50	0.99	0.83, 1.17	0.99	0.82, 1.21	Reference
Alcohol									
Never drinks	1.71	1.29, 2.27	1.17	0.84, 1.63	0.98	0.78, 1.22	0.74	0.57, 0.95	Reference
Rarely drinks	1.47	1.18, 1.83	1.14	0.88, 1.47	0.91	0.77, 1.07	0.85	0.69, 1.03	Reference
Risky drinker	1.03	0.65, 1.64	1.13	0.65, 1.96	0.94	0.67, 1.31	1.17	0.78, 1.78	Reference
Smoking									
Current smoker	1.08	0.83, 1.41	1.03	0.75, 1.40	0.76	0.62, 0.94	0.75	0.59, 0.95	Reference
Ex-smoker	0.88	0.71, 1.09	0.88	0.68, 1.14	0.69	0.58, 0.81	0.65	0.54, 0.79	Reference
Physical activity									
None to very low	1.12	0.83, 1.52	1.19	0.83, 1.71	0.92	0.73, 1.17	1.10	0.83, 1.45	Reference
Low to moderate	0.86	0.64, 1.16	0.83	0.58, 1.19	0.91	0.72, 1.14	1.01	0.77, 1.31	Reference
Moderate to high	1.02	0.75, 1.39	1.18	0.82, 1.70	1.01	0.79, 1.28	1.14	0.87, 1.51	Reference
Caring									
Yes	0.86	0.67, 1.08	0.71	0.54, 0.95	0.93	0.78, 1.11	0.87	0.70, 1.06	Reference

Physical health	0.98	0.97, 0.99	0.99	0.98, 1.01	1.00	0.99, 1.01	1.01	0.99, 1.02	Reference
Mental health	1.00	0.99, 1.01	1.00	0.99, 1.01	1.01	1.00, 1.02	1.01	1.00, 0.02	Reference

CI Confidence Interval; OR Odds Ratio

Unadjusted model=OR for single variable only; Fully adjusted model =OR adjusted for all variables in table. Physical health=SF-36 physical component summary score; Mental health=SF-36 mental component summary score. Reference categories for categorical exposures: Labour force=full-time; Birth country=Australia; Area of residence=outer regional/remote; Living arrangements=adults and children; Body mass index=BMI <25; Alcohol=low risk drinker; Smoking=never smoker; Caring=No. ^aBirth country categories 'Australia'= 'Australia, Cocos and Christmas Islands'; 'Other ESB'=UK, New Zealand; 'Europe/Asia/Other'=all other for eg. Italy, Greece, Vietnam, Russian Federation, Turkey; ^boutcome Reference category