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Precarious employment in early adulthood and later mental health problems: a register-linked cohort study

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ABSTRACT

Background Precarious employment is a determinant of self-reported mental health problems among young adults. Less is known about more severe and objectively measured health outcomes, such as mental health problems requiring inpatient care. The current study aims to investigate the effect of precarious employment in early adulthood on later mental health problems requiring inpatient care.

Method A register-based cohort study, based on the Swedish Work, Illness and Labor-market Participation cohort, was conducted, following a cohort of young adults aged 27 years between 2000 and 2003 (born between 1973 and 1976) (n=339 403). Information on labour market position in early adulthood (precarious employment, substandard employment, unemployment and standard employment) was collected from registers 3 years after graduating from school. Information on the outcome of mental health problems (depression, anxiety and stress-related disorders) was collected from the National Patient Register. HRs with 95% CIs were obtained by Cox regression analyses.

Results After adjusting for important covariates, such as prior mental health problems, compared with individuals in standard employment, individuals who were precariously employed in early adulthood had an increased risk of later mental health problems (HR_{adjusted} 1.51 95% CI 1.42 to 1.60). The association between precarious employment and mental health was slightly stronger for males.

Conclusions In Sweden, entry into the labour market with precarious employment is associated with an increased risk of mental health problems, which is important given that precarious employment is becoming more prevalent among young adults.

BACKGROUND

Young people face difficulties entering the labour market due to limited work experience and work opportunities as well as a lack of social security in case of unemployment. Furthermore, youth appear to be sensitive to having a low attachment to the labour force as research suggests a ‘scarring’ effect in terms of lower pay and low labour force attachment later in life.^{1–3} The high unemployment rate and increased prevalence of non-standard forms of employment such as precarious employment have hit young people especially hard.^{4–6} Precarious employment is characterised by low wages, lack of employment security (ie, temporary employment),

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ It is known that precarious employment adversely affects both mental and physical health, among both the young and older working population.

WHAT THIS STUDY ADDS

⇒ This study adds that precarious employment at labour market entry is a risk factor for mental health problems requiring inpatient care.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Employment status needs to be conceptualised as a continuum as opposed to a dichotomy (employed and unemployed), subsequently research and policy need to focus on the risk and consequences of being loosely integrated into the labour market as opposed to being completely excluded from the labour market.

and limited social protection and workplace rights (ie, lack of benefits) which are considered inferior to permanent full-time employment.^{7–9} In Sweden from 1992 to 2017, the proportion of young men and women (aged 34 years or less) in precarious employment has increased by more than 50%.⁴ Research has previously demonstrated that precarious employment adversely affects both mental and physical health, among both the young and older working population.^{6 10–15}

Previous research on the effects of precarious employment in early adulthood has relied on cross-sectional data to a great extent,¹³ consequently making it difficult to draw any conclusions about the temporality between the exposure and the outcome. Furthermore, previous research has not accounted for health selection and confounding due to prior health problems which are likely to bias the association between precarious employment and health.¹⁶ The few longitudinal studies that have investigated the effects of precarious employment in early adulthood have found an increased risk of self-reported mental health problems.^{17–19} Less is, however, known about more severe and objectively measured health outcomes, such as mental health problems requiring inpatient care, which has previously been linked to youth unemployment and precarious employment in the general working-age



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population.^{20–22} A recent study found an increased risk of common mental disorders, substance use and suicide among individuals with low-quality employment trajectories, which had the lowest mean age compared with other trajectories.²² Given that a smooth transition from school to work is essential for the health and well-being of young adults, further research is needed to investigate this transition concerning the effects of precarious employment in early adulthood on health later in life.^{6 10 13 15} Taking a life course perspective, youth can be considered a sensitive period in life²³ and mental health problems are a strong risk factor for later labour market marginalisation and early exclusion from the labour market.^{16 24 25}

The current study aims to investigate the effect of precarious employment in early adulthood on later mental health problems requiring inpatient care. To this end, a large cohort of young individuals registered in Sweden will be followed up in high-quality nationwide registers and using a multidimensional construct to define precarious employment.

METHOD

Study population

This register-based cohort study is based on the Swedish Work, Illness and Labour Market Participation (SWIP) cohort. The SWIP cohort is created through the linkage of nationwide registers and includes everyone between the ages of 16–65 years that were registered in Sweden in 2005 and followed up until 2019.²⁶

The study population comprised all individuals born between 1973 and 1976 and who had graduated from school (primary, secondary or tertiary education) before the age of 27 ($n=472\,171$). Age 27 years was chosen as the focus was on labour market position in early adulthood (3 years after graduation), consequently, to be able to collect information on exposure before the age of 30 years.² Similar to our previous study,² exclusion criteria for the study were as follows: (1) received disability pension or died before baseline (3 years after graduation from school), (2) registered as a student after the age of 27 years, (3) missing information on the highest level of education at age 27 years and (4) missing information on covariates. Generally, the excluded individuals were more often females, born outside of Sweden and had parents with lower socioeconomic status (SES) and educational attainment (online supplemental table S1). The final analytical sample consisted of 339 403 individuals (figure 1).

Exposure: labour market position in early adulthood

Adapted from previous research, 3 years after graduation was used to determine the end of the school-to-work transition and when the exposure of labour market position was assessed.^{2 27} In a first step, the Longitudinal Integration Database for Health Insurance and Labour Market Studies (LISA) register was used to obtain the year of examination from primary, secondary or tertiary education the year the individuals turned 27 years (between 2000 and 2003), in line with our previous research.² For the individuals with missing information on the year of examination (7.8% of the analytical measure), a crude measure was calculated by using the median year of graduation given the level of education of each birth cohort. In a second step, using the LISA register, information on labour market position was assessed 3 years after the year of graduation and used to categorise the study population into five mutually exclusive groups in the following order: precarious employment relation (PER), long-term unemployed, substandard employment relations

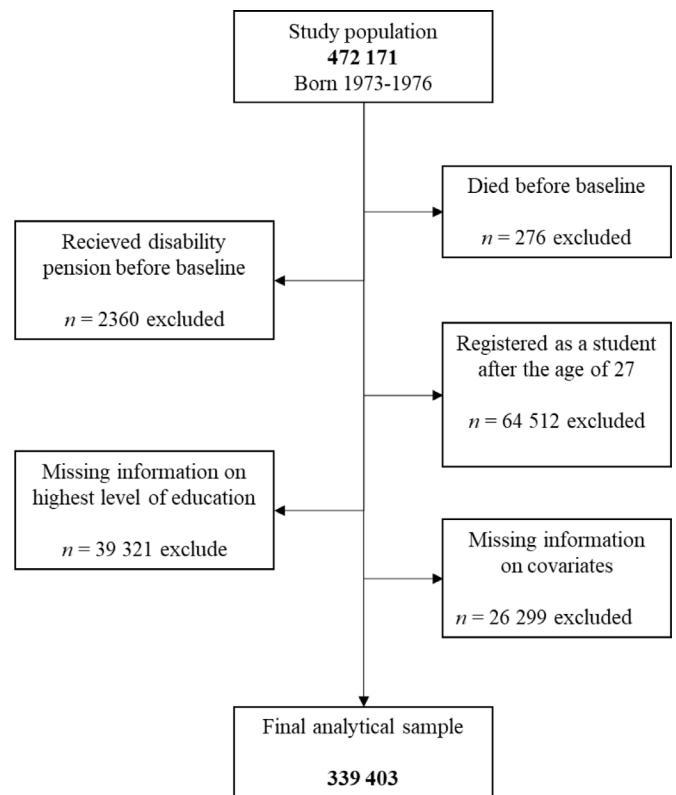


Figure 1 Flow chart describing the selection process of the analytical sample.

(SSER), standard employment relations (SER) and other. SER served as the reference category.

PER, SSER and SER were defined using the Swedish Register-based Operationalisation of Precarious Employment (SWE-ROPE) version 2.0.²⁸ The three main components (employment insecurity, income inadequacy and lack of rights and protection) of PER that Kreshpaj *et al* identified are covered by five different components (contractual employment insecurity, temporariness, multiple-job holding, income level and coverage under collective bargaining agreement) in the SWE-ROPE, as seen in (table 1).²⁹ The precarious score was calculated on the salaried working population only (ie, students, individuals with no income and self-employed were excluded), the self-employed have been excluded in the scoring of PER in the latest version of SWE-ROPE as self-employed individuals are quite different from precariously employed individuals in terms of various factors, such as risk-taking and health.²² The five components were individually scored and summed up resulting in a precarious score between -9 and 2 .³⁰ In line with previous research, PER was defined as scoring < -3 , SSER was defined as scoring between -3 and -1 , and a score equal to and higher than 0 was defined as SER.^{2 31} The group SSER was established to create more contrasting groups of PER and SER.

Young adults reporting at least 180 days of unemployment during one calendar year 3 years after graduation were considered long-term unemployed. Young adults who did not classify into any of the groups (eg, self-employed, not registered as employed or student) were defined as other. This group was created to reduce the potential issue of selection bias when excluding individuals that did not classify into any of the other groups.

Table 1 SWE-ROPE scoring of items

Item	Score				
	-2	-1	0	1	2
Contractual employment insecurity		Agency employed	Directly employed		
Temporariness	Unstable employment		Stable employment		
Multiple-job holding	Multiple jobs (>2 jobs) and multiple sectors (>1 sector)		Multiple jobs (>2 jobs)	No multiple jobs (1 job)	
Income level (% of median)	<60	60–80	81–120	121–200	>200
Coverage under collective bargaining agreement (% likelihood)	<70	70–90	91–100		

SWE-ROPE, Swedish Register-based Operationalisation of Precarious Employment.

Outcome: psychiatric diagnoses

Information on the outcome was obtained from the National Hospital Discharge Register according to the Swedish version of the International Classification of Diseases (ICD) versions 9 (1987–1996) and version 10 (from 1997). In line with previous research,³² the outcome of mental health problems was defined as including depressive disorders (ICD-9: 296.2, 296.3; ICD-10: F32–F34), anxiety disorders (ICD-9: 300.0, 300.2, 300.3; ICD-10: F40–F42), and stress-related disorders (ICD-9: 308, 309; ICD-10: F43). First-time admissions during follow-up with a mental disorder either as a principal or contributing discharge diagnosis were of interest.

Covariates

Information on several individual and family-level factors was obtained from the registers and included in the analyses. On an individual-level information on sex, birth year, country of birth (Sweden or elsewhere) and own highest level of education (primary, secondary, university), as well as any prior mental health problems requiring inpatient care (ICD 10: F00–F99; ICD 9: 291–319). Information on parents' highest level of education and highest levels of SES (non-manual, manual, self-employed/farmer and not classified) before the follow-up was also included.

Statistical analysis

Differences in baseline characteristics between the groups were tested using Pearson's χ^2 test. Three years after graduation from school (primary, secondary or university), information on the exposure variable of labour market position and baseline characteristics was collected. The association between labour market position 3 years after graduation and mental health problems were estimated by Cox proportional hazard models to obtain HRs with 95% CIs. Results of the Schoenfeld residuals test found the proportional hazards assumption was found not to be violated. Person-time, in years, was counted from 4 years after school graduation (1 January 1993, the earliest), until the first date of mental diagnoses, emigration, date of death or end of follow-up (31 December 2017), whichever came first.

All analyses were conducted on the total population as well as stratified by sex.^{14 33} In the analyses, the demographic factors (sex, age at baseline, country of birth and highest level of education) were included first. In the next step, we also included prior mental health problems as this covariate was of special interest due to health selection (ie, poor mental health is a risk factor for worse labour market outcomes). In the last model, all covariates were included simultaneously.

Sensitivity analyses excluding individuals with prior mental health problems were conducted to further assess the potential

bias due to health selection. Additional sensitivity analyses were performed, recategorising individuals with any unemployment (less than 180 days) from the precarious employment group into the group 'other', to investigate if the increased risk among PER was driven by experiences of unemployment. The last sensitivity analysis was conducted excluding all individuals with missing information on the year of examination from school. All analyses were performed using Stata Statistical Software, release V.17.

RESULTS

Baseline characteristics

The baseline characteristics of the study population, stratified by labour market position 3 years after graduating from school, can be found in [table 2](#). The largest proportion of the study population was defined as being in SER and SSER while 12.4% were defined as PER. In general, individuals in PER had lower levels of education, worse mental health before follow-up and lower levels of parental SES compared with individuals in SER. Compared with individuals who were in long-term unemployment, individuals in PER had generally higher education, slightly better mental health before follow-up and a higher level of parental SES. Individuals defined as other were to a greater extent born outside of Sweden, with lower levels of education and worse prior mental health problems.

During follow-up, a total of 16 474 individuals (3.7%) were admitted to the hospital at least once due to mental health problems. On average, the follow-up time was 17.8 years. The incidence rate for PER to get mental health problems was 2.5 per 1000 person-years, while individuals in SER had an incidence rate of 1.4 per 1000 person-years.

Mental health problems

In [table 3](#), the association between labour market position in early adulthood and mental health problems for the whole population and stratified by sex can be found. In the crude analyses, the individuals in PER had a 1.77-fold (95% CI 1.67 to 1.87) increased risk of receiving inpatient care due to mental health problems. After adjusting for important covariates, including prior mental health problems, the elevated risk among PER remained only slightly diminished (HR 1.51, 95% CI 1.42 to 1.60). Individuals defined as being in long-term unemployment and SSER 3 years after graduation were also at an increased risk compared with individuals in SER; HR 1.95 (95% CI 1.83 to 2.07) and HR 1.13 (95% CI 1.08 to 1.19), respectively. An increased risk was also found among individuals defined as others; HR 1.86 (95% CI 1.76 to 1.98).

Stratifying the analyses by sex the association between precarious employment and later mental health problems in the fully

Table 2 Baseline characteristics of study population (born 1973–1976), stratified by labour market position 3 years after graduation

	SER n (%)	PER n (%)	Long-term unemployed n (%)	SSER n (%)	Other n (%)	P value
Total	133 141 (39.2)	42 232 (12.4)	26 476 (7.8)	107 395 (31.6)	30 159 (8.9)	
Sex						<0.001
Male	71 079 (53.4)	21 761 (51.5)	15 571 (58.8)	56 132 (52.3)	15 266 (50.6)	
Female	62 062 (46.6)	20 471 (48.5)	10 905 (41.2)	51 263 (47.7)	14 893 (49.4)	
Country of birth						<0.001
Sweden	129 362 (97.2)	39 889 (94.5)	24 420 (92.2)	103 504 (96.4)	26 645 (88.4)	
Outside of Sweden	3779 (2.8)	2343 (5.6)	2056 (7.8)	3891 (3.6)	3514 (11.7)	
Birth year						<0.001
1973	38 884 (29.2)	7762 (18.4)	8762 (33.1)	26 310 (24.5)	7648 (25.4)	
1974	35 272 (26.5)	10 081 (23.9)	8074 (30.5)	27 531 (26.5)	8429 (28.0)	
1975	31 047 (23.3)	11 518 (27.3)	5986 (22.6)	26 726 (24.9)	7373 (24.5)	
1976	27 938 (21.0)	12 871 (30.5)	3654 (25.0)	26 828 (25.0)	6709 (22.3)	
Age at baseline (mean±SD)	24.8±3.5	23.6±3.2	22.7±3.1	24.3±3.5	22.8±3.4	
Education						<0.001
Primary	6772 (5.1)	3285 (7.8)	3718 (14.0)	5031 (4.7)	7546 (25.0)	
Secondary	60 248 (45.3)	27 761 (65.7)	18 261 (69.0)	60 479 (56.3)	15 919 (52.8)	
University	66 121 (50.0)	11 186 (26.5)	4497 (17.0)	41 885 (39.0)	6694 (22.2)	
Prior mental health problems						<0.001
Yes	2397 (1.8)	1397 (3.3)	1095 (4.1)	2408 (2.2)	2511 (8.3)	
No	130 744 (98.2)	40 835 (96.7)	25 381 (95.9)	104 987 (97.8)	27 648 (91.7)	
Parental education						<0.001
Primary	18 909 (14.2)	6346 (15.0)	5497 (20.8)	15 700 (14.6)	6431 (21.3)	
Secondary	65 179 (49.0)	21 225 (50.3)	14 544 (54.9)	54 325 (50.6)	14 636 (48.5)	
University	49 053 (36.8)	14 661 (34.7)	6435 (24.3)	37 370 (34.8)	9092 (30.2)	
Parental SES						<0.001
Non-manual	77 301 (58.1)	22 176 (52.5)	10 750 (40.6)	59 374 (55.3)	12 873 (42.7)	
Manual	44 854 (33.7)	14 694 (34.8)	11 828 (44.7)	37 109 (34.6)	11 129 (36.9)	
Self-employed/farmer	5009 (3.8)	1924 (4.6)	952 (3.6)	4838 (4.5)	1468 (4.9)	
Not classified	5978 (4.5)	3438 (8.1)	2946 (11.1)	6074 (5.7)	4689 (15.6)	
Outcome						<0.001
Mental health problems	3127 (2.4)	1817 (4.3)	1607 (6.1)	3051 (2.8)	2118 (7.0)	

PER, precarious employment relation; SER, standard employment relation; SES, socioeconomic status; SSER, substandard employment relation.

adjusted model was stronger among males (HR_{men} : 1.56, 95% CI 1.42 to 1.71; HR_{women} : 1.48, 95% CI 1.37 to 1.60), as seen in table 3.

Sensitivity analyses

The sensitivity analyses excluding 9808 individuals with prior mental health problems demonstrated similar effects of PER on mental health problems as in the main analyses (online supplemental table S2). Furthermore, recategorising PER individuals with unemployment (n=25 718) into the group of 'other' yielded similar, slightly attenuated, results among the PER group as in the main analyses (online supplemental table S3). Excluding individuals with missing information on the year of examination (n=25 053) did not change the estimations substantially (online supplemental table S4).

DISCUSSION

The results of this study suggest that individuals in precarious employment, 3 years after graduating from school, are at an increased risk of later mental health problems requiring inpatient care compared with same-aged individuals in standard employment. The association was slightly stronger among males.

The current results further strengthen and extend existing research on the association between precarious employment and

mental health among young adults.^{17–19} Previous research on young adults has used self-reported mental health and well-being, a finding that was extended to a more severe outcome in the current study. This is of importance as mental health problems are a main risk factor for later labour market marginalisation and early exclusion from the labour market.^{16 24 25} In line with previous research on the general working population, we found a link between precarious employment in early adulthood and later mental health problems requiring inpatient care.²¹ Given that the transition from school-to-work is a distinct and sensitive period in the life course it is important to focus on the effects of precarious employment during entry into the labour market.²⁷ Subsequently, the results of the current study strengthen the importance of having a strong labour market attachment in early adulthood.^{6 34}

In previous research, 3 months or more of youth unemployment has been linked to an increased risk of mental health problems requiring inpatient care,²⁰ which was confirmed in the current study among young adults unemployed for at least 6 months, 3 years after graduation. Furthermore, the results of the current study lend support to the notion of conceptualising employment status as a continuum as opposed to employed or not employed. In the main analyses, there were clear differences in the five categories of labour market position where individuals

Table 3 Crude and adjusted HRs with 95% CI for the association between labour market position in early adulthood and later mental disorders requiring inpatient care, for all and stratified by sex

	SER HR (95%CI)	PER HR (95%CI)	Long-term unemployed HR (95%CI)	SSER HR (95%CI)	Other HR (95%CI)
Total					
Crude	1.00	1.77 (1.67 to 1.87)	2.29 (2.15 to 2.43)	1.19 (1.13 to 1.25)	2.78 (2.63 to 2.94)
Model 1	1.00	1.54 (1.45 to 1.63)	2.04 (1.91 to 2.16)	1.14 (1.08 to 1.20)	2.06 (1.94 to 2.18)
Model 2	1.00	1.51 (1.42 to 1.60)	1.98 (1.86 to 2.11)	1.13 (1.07 to 1.19)	1.88 (1.76 to 2.00)
Model 3	1.00	1.51 (1.42 to 1.60)	1.95 (1.83 to 2.07)	1.13 (1.08 to 1.19)	1.86 (1.76 to 1.98)
No of events n(%)	3127 (2.4)	1817 (4.3)	1607 (6.1)	3051 (2.8)	2118 (7.0)
Men					
Crude	1.00	1.82 (1.66 to 1.99)	2.52 (2.31 to 2.75)	1.16 (1.07 to 1.25)	2.91 (2.67 to 3.17)
Model 1	1.00	1.58 (1.45 to 1.74)	2.19 (2.00 to 2.40)	1.12 (1.04 to 1.22)	2.11 (1.93 to 2.31)
Model 2	1.00	1.55 (1.42 to 1.70)	2.12 (1.94 to 2.32)	1.11 (1.03 to 1.21)	1.92 (1.76 to 2.11)
Model 3	1.00	1.56 (1.42 to 1.71)	2.08 (1.90 to 2.27)	1.12 (1.03 to 1.21)	1.91 (1.74 to 2.09)
No of events n(%)	1306 (1.8)	752 (3.5)	1232 (2.2)	1306 (1.8)	880 (5.8)
Women					
Crude	1.00	1.70 (1.58 to 1.84)	2.18 (2.01 to 2.37)	1.20 (1.12 to 1.28)	2.63 (2.45 to 2.83)
Model 1	1.00	1.50 (1.39 to 1.62)	1.92 (1.76 to 2.09)	1.12 (1.07 to 1.22)	2.04 (1.89 to 2.21)
Model 2	1.00	1.48 (1.37 to 1.60)	1.88 (1.72 to 2.04)	1.14 (1.07 to 1.22)	1.87 (1.73 to 2.03)
Model 3	1.00	1.48 (1.37 to 1.60)	1.85 (1.70 to 2.02)	1.14 (1.07 to 1.21)	1.85 (1.71 to 2.00)
No of events n(%)	1821 (2.9)	1065 (5.2)	801 (7.4)	1819 (3.6)	1238 (8.3)
Model 1: Adjusted for sex (total only), country of birth, year of birth, age at baseline, highest levels of own education.					
Model 2: Additional adjustment for prior mental health problems requiring inpatient care.					
Model 3: Additional adjustment for highest level of parents' educational attainment and socioeconomic status.					
PER, precarious employment relation; SER, standard employment relation; SSER, substandard employment relation.					

in long-term unemployment and defined as other had the highest risk of later mental health problems. Lower increased risk estimates were found among young adults in SSER and PER. Here, this study adds to the discussion and body of literature investigating if any job is better than no job at all.³⁵ Being unemployed or precariously employed might increase a sense of lack of control as the future is uncertain, and subsequently, it is more difficult to have long-term plans or goals which could have negative effects on individuals' mental health.¹⁵ Results of previous research suggest that young adults in unemployment 3 years after education have a higher risk of being unemployed 10 years later compared with young adults in PER.² This suggests that young adults in PER might have better chances of positioning themselves in the labour markets, which might explain the difference in risk estimates.

Furthermore, in line with previous research on young adults, we found that the association between precarious employment, health and labour market outcomes appeared to be slightly stronger for males.^{2, 14} These findings are contradicting the hypothesis proposed by Menéndez *et al*, where the authors proposed a greater effect of precarious employment on women's health due to the gendered division of employment and unpaid domestic work.³⁶ A potential explanation for this is that although youth is considered a sensitive time for all, young males might be even more sensitive, resulting in a stronger association between labour market position in early adulthood and later mental health.²³ The breadwinner model has also been proposed within the precarious employment literature, where differences in mental health between men and women arise due to differences in traditional roles concerning work and family.¹⁵ These differences in traditional roles are diminishing in recent times given the more dual earner/dual carer models and higher female participation in the labour market,⁵ subsequently, different results might be obtained if the same study was done today. Another potential

explanation could be that men's depression is more connected to their work and women are more depressed for other reasons that have less to do with their jobs, thus making the association weaker.³⁷ Only a few studies have investigated the differential effects of precarious employment among men and women, research which is of importance as precarious employment tends to be more common among women which could reinforce the existing gender inequalities in health.^{6, 33}

Strengths and weaknesses

The current study has several strengths and limitations that need to be considered in relation to the results. First, a major strength is being able to follow a large cohort of young adults for a long time in the nationwide registers. A limitation of this study is that the SWIP cohort was created including only the individuals registered in Sweden in 2005 which results in an exclusion of individuals in the study sample who died before 2005. In a separate database, we were able to calculate that it was only 1.5% of the birth cohorts (1973–1976) that were excluded due to these register constraints which should only have a marginal effect on the estimates.

A multidimensional construct (SWE-ROPE) was used to measure precarious employment which is advantageous compared with only using a single dimension, such as temporary employment which could lead to misclassification.^{30, 38, 39} The SWE-ROPE has been developed in line with the dimensions of precarious employment³⁰ and has been used in multiple studies demonstrating its ability to capture the population of interest which is a strength.^{2, 12, 22} A limitation, however, is that due to register constraints, the SWE-ROPE does not include rights, perspective and part-time work, which have also been identified as an important dimension of precarious employment.³⁹ Exposure information was only collected at a single-point-in time as

the focal interest of the study was to investigate where young adults were located on the labour market 3 years after graduating from school. Consequently, the lack of repeated measures of precarious employment could be a limitation as some precariously employed individuals quickly move into higher quality employment while others remain precariously employed, as seen in previous research.² Another potential limitation could be collecting the exposure information during the 1990s as this was a period with high unemployment in Sweden and many other countries.⁴⁰ During this time, unemployment and especially youth unemployment increased drastically to around 20%. To combat the dramatic increase in youth unemployment, there were several initiatives implemented to prolong education, which many individuals and especially young females took part in.⁴¹ Subsequently, a larger proportion of females were excluded from the analyses as they were still studying after the age of 27 years, which could potentially introduce bias in the result as we have excluded the most educated women.

Information on the outcome of mental health problems was collected from high-quality and reliable registers which is a strength as it decreases the risk of recall bias or biased self-reported information. A limitation of using the National Patient Register is that it only captures the most severe cases with mental health problems as it requires that the individual has received inpatient care. Future studies including information from primary care data could add more nuance to the picture. Furthermore, patterns of help-seeking and care use could differ between employment groups, however, the probability of this influencing the current results is low as the outcome of mental health problems requiring inpatient care are very severe. Another strength of the current study was the inclusion of prior mental health problems,¹⁶ although with the same limitations as described above. Furthermore, the majority of individuals experience mental illness before their mid-20s,⁴² thus given the variation in age at the onset of the follow-up period with regard to the outcome, some bias could have been introduced.

Lastly, there could be other factors such as which occupation or industry precarious employed work in, which may be important, but it was not possible to account for this as a large proportion of the study population included was unemployed.

CONCLUSIONS

Entry into the labour market with precarious employment is associated with an increased risk of mental health problems. This is important at a time when precarious employment is increasing in Sweden and elsewhere, especially among young adults.

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Contributors ET conceived the study in collaboration with NM-S, JCH-R, MA and TB. NM-S, MA, TB and ET worked with the acquisition of the data. ET performed the initial analyses in collaboration with NM-S, JCH-R, MA and TB. ET drafted the initial version of the manuscript. NM-S, JCH-R, MA and TB helped review drafts of the manuscript. ET is responsible for the overall content as guarantor. All authors read and approved the final manuscript.

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Data availability statement Data may be obtained from a third party and are not publicly available.

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