

ADOLESCENTS IN TRANSITION TO YOUNG ADULTHOOD: EVOLUTION OF MENTAL HEALTH STATUS AND RISK FACTORS ASSOCIATED WITH DEPRESSIVE AND ANXIETY DISORDER

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SUMMARY

Background: In this paper we focus on adolescents in transition towards young adulthood (ATYA). We know from international studies that the transition process makes adolescents vulnerable to mental illness. However, little is known about Belgian ATYA mental-health status. Nor are risk factors associated with their mental illness understood, in particular with regard to depressive and anxiety disorder. The aim of this study is (1) to discuss evolution in time of prevalence of depressive disorder (DD) and anxiety disorder (AD) among Belgian ATYA and (2), to identify risk factors associated with these disorders among ATYA.

Subjects and methods: Data was extracted from the Belgian Health Interview Survey (BHIS), which is a cross-sectional population survey, carried out in 2001, 2004, 2008, and 2013. Information about the population's background characteristics, health services utilization, health behaviours and mental health status were extracted and statistically analyzed.

Results: ATYA prevalence of DD and AD was higher in 2013 in comparison with previous years. These changes were significant only for DD ($F=4.466$, $p=0.004$). In contrast with younger adolescents, among ATYA odds of DD were 28.2% higher (OR 1.282, 95% CI 0.967-1.698, $p=0.084$) and, odds of AD were 55.2% higher (OR 1.552, 95% CI 1.137-2.119, $p=0.006$). For ATYA, a poor quality of social support was the most predictive factor of DD (OR 11.187, 95% CI 5.530-22.629, $p<0.0001$) and AD (OR 6.238, 95% CI 2.845-13.676, $p<0.0001$); whereas, having a paid job was the most protective factor with regard to DD (OR 0.282, 95% CI 0.169-0.470, $p<0.0001$) and AD (OR 0.552, 95% CI 0.330-0.924, $p<0.024$).

Conclusion: Prevalence of mental illness among Belgian ATYA appears to worsen in time. In comparison with younger adolescents, ATYA are more vulnerable to anxiety disorders. Adverse and protective risk factors were identified and discussed in a way to improve access, continuity and mental healthcare pathways for Belgian ATYA.

Key words: adolescence - transition - mental-health status - risk factors

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INTRODUCTION

Recent conceptualization of adolescence argues for an expanded and more inclusive definition of adolescence, considering ages 10 to 24 years old (Sawyer et al. 2018). In this paper, we will particularly focus on the critical moment of transition towards young adulthood, which concerns the late adolescent developmental phase, around 19 to 24 years old, hereafter adolescents in transition to young adulthood (ATYA). This age is characterized by major transitions in adolescent life (e.g. school orientation, leaving family, autonomy, social expectations and integration, etc.).

There are several reasons to focus on ATYA. First, transition to the young adulthood period is identified both by mental health professionals and epidemiological studies as a moment of significant psychological vulnerability (Polanczyk et al. 2015, Costello et al. 2005). According to the WHO, the prevalence of any mental illness is higher among late adolescents in comparison with younger teenagers (WHO 2013). Secondly, access to appropriate care is not adequate for ATYA. Indeed, only one in four adolescents suffering from a significant mental disorder received specialized services. Interna-

tional literature shows that ATYA with a mental health disorder do not have sufficient access to appropriate care, while ad-hoc structures are lacking. Moreover, ATYA are often reluctant to seek help among mental health professionals and services (Malla et al. 2018). A rapid access to adequate care is fundamental. Indeed, it was estimated that around 50% of adult mental health conditions originate in adolescence (Kessler et al. 2007). Therefore, early intervention is recommended to avoid short and long-term negative consequences of early mental health problems. Indeed, in the short-term, adequate care decreases the length of mental health disorders and prevents negative social consequences (e.g. premature termination of schooling, social exclusion). In the long-term, relevant interventions help to reduce morbidity during adulthood and prevent socio-economic exclusion (De Girolamo et al. 2012, Beesdo-Baum 2015). Finally, an additional challenge for healthcare systems is that, historically, the division of services organized by "legal-administrative categories" (i.e. maximum age set at 18 years old) didn't match adolescent developmental phases and the continuum before and after 18 years old. Therefore, within healthcare systems and services from 18 years old onwards, individuals are considered as

adults and referred to different services compared to those younger than 18. This has considerable implications on care delivery: it jeopardizes continuity of care at a developmental turning point. This raises the question of how best to organize mental healthcare for ATYA. In Belgium, the 2015 reform of mental healthcare argues for inclusion of youth until the age of 23 in child-psychiatric services and the development of integrated care within enlarged network (primary care, social services, and mobile team) and community.

Adolescent mental health during transition to young adulthood is a critical issue for public health and has become a key challenge for health care systems and more specifically for mental health professionals. However, in Belgium one significant knowledge gap remains. Indeed, little is known about the mental health status among this specific group of ATYA and risk factors associated to their mental illness. By analysing the Belgian Health Interview Survey (BHIS) database, the aim of this paper is (1) to discuss evolution in time of prevalence of depressive disorder (DD) and anxiety disorder (AD) among ATYA, and (2), to identify risk factors associated with DD and AD among ATYA.

SUBJECTS AND METHODS

The Belgian Health Interview Survey (BHIS) is a repeated cross-sectional population survey where data are collected through face-to-face interviews. BHIS is based on a national representative sample of 10,000 participants, including adolescents aged 15 years and older. BHIS covers four domains: health status, medical consumption, lifestyle and prevention. It contains also socio-demographic and socio-economic background information. For the present study, data were extracted from surveys carried out in 2001, 2004, 2008, and 2013. Statistical analyses were performed with IBM SPSS 25®. Our study conforms to the provisions of the Declaration of Helsinki in 1995 (as revised in Edinburgh in 2000).

RESULTS

Firstly, we present below evolution in time of the prevalence of depressive disorder (DD) and anxiety disorder (AD) for ATYA (19-24 y/o) in comparison with younger adolescents (15-18 y/o) and adults (25+ y/o). Secondly, we provide analysis of risk factors associated with depressive and anxiety disorders among ATYA.

Population distribution per age group and per year of data collection is described in table 1.

Table 1. Population distribution

Age groups	2001	2004	2008	2013
15-18	620	538	515	543
19-24	843	899	846	807
25+	8956	10262	8657	8117

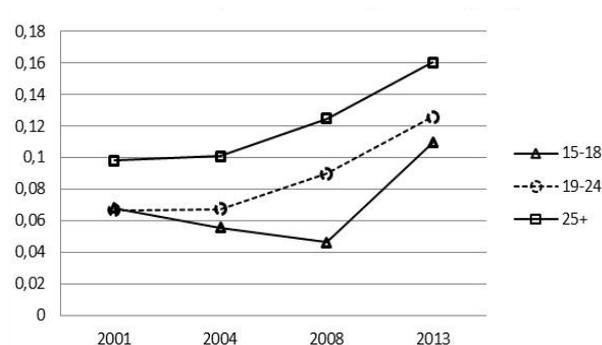


Figure 1. Evolution of depressive disorder prevalence per age

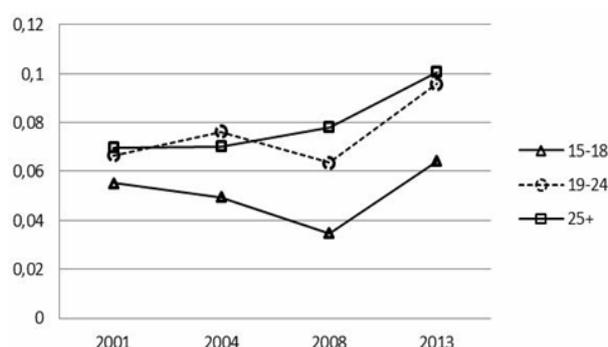


Figure 2. Evolution of anxiety disorder prevalence per age

Evolution in time of the prevalence of DD and AD within Belgian population per age groups is presented in figures 1 and 2.

Among the Belgian population, prevalence of DD was significantly higher in 2013 in comparison with previous years of data collection. This was observed for each age group, that is the 15-18 ($F=3.048$, $p=0.028$), the 19-24 ($F=4.466$, $p=0.004$) and the 25+ ($F=69.650$, $p<0.0001$). Regarding prevalence of AD, in comparison with previous years, all age groups showed a higher prevalence in 2013, but these differences were statistically significant only for the 25+ group ($F=26.216$, $p<0.0001$) and not for other age groups, that is 15-18 ($F=0.883$, $p=0.449$), and, 19-24 ($F=1.320$, $p=0.266$).

In contrast with the 15-18 group, we observed that odds of DD among ATYA were 28.2% higher (OR 1.282, 95% CI 0.967-1.698, $p=0.084$) and 91.4% higher for adults (OR 1.914, 95% CI 1.516-2.415, $p<0.0001$). Odds of AD among ATYA were 55.2% higher (OR 1.552, 95% CI 1.137-2.119, $p=0.006$) and 72.6% higher for adults (OR 1.726, 95% CI 1.325-2.248, $p<0.0001$) in comparison with the 15-18 group. Our logistic regression models were controlled for the following covariables: gender, year of survey, household income, region, urbanisation and country of birth.

The multivariate logistic regression analysis of risk factors associated with DD and AD is presented in table 2.

Table 2. Analysis of risk factors

	Sample	Depressive disorder			Anxiety disorder		
		Odds Ratio	p-value	95% CI	Odds Ratio	p-value	95% CI
Gender							
Male	1,101	1			1		
Female	1,183	1.993	<0.0001	1.368-2.904	2.408	<0.0001	1.663-3.487
Region							
Wallonia	906	1			1		
Flanders	851	1.447	0.078	0.959-2.182	1.169	0.469	0.766-1.783
Brussels	527	2.317	0.001	1.387-3.872	1.426	0.163	0.866-2.350
Urbanization							
Rural	646	1			1		
Urban	1,086	0.571	0.032	0.341-0.954	0.820	0.405	0.513-1.309
Country of birth							
Belgium	1,976	1			1		
EU member	125	0.716	0.341	0.361-1.422	0.626	0.226	0.293-1.336
Non-EU member	175	0.821	0.519	0.450-1.496	0.739	0.345	0.395-1.384
Household Income							
Q1	538	1			1		
Q2	320	0.552	0.043	0.310-0.982	0.631	0.110	0.359-1.110
Q3	328	0.689	0.197	0.391-1.214	0.677	0.184	0.381-1.204
Q4	395	0.992	0.975	0.592-1.661	0.722	0.248	0.415-1.254
Q5	369	0.614	0.118	0.333-1.133	0.590	0.094	0.318-1.093
Paid job							
No	363	1			1		
Yes	969	0.282	<0.0001	0.169-0.470	0.552	0.024	0.330-0.924
Student							
No	1,344	1			1		
Yes	936	1.040	0.802	0.767-1.409	0.873	0.417	0.629-1.212
GP contacts past year							
0 to 6	2,048	1			1		
7 to 12	140	2.628	0.001	1.519-4.544	2.189	0.007	1.236-3.876
13+	80	3.731	<0.0001	1.999-6.964	3.813	<0.0001	2.079-6.994
ED contact past year							
No	1,820	1			1		
Yes	362	1.544	0.034	1.034-2.304	1.524	0.042	1.015-2.288
Social support quality							
Strong	346	1			1		
Intermediate	487	1.871	0.053	0.992-3.528	1.990	0.051	0.997-3.972
Poor	126	11.187	<0.0001	5.530-22.629	6.238	<0.0001	2.845-13.676
Cannabis use past year							
No	1,333	1			1		
Yes	248	2.379	<0.0001	1.469-3.854	2.108	0.006	1.243-3.575
Problematic alcohol							
No	1,671	1			1		
Yes	140	2.869	<0.0001	1.646-5.000	2.919	<0.0001	1.645-5.180
		$\chi^2=212.179$; $df=34$; $p<0.0001$			$\chi^2=143.030$; $df=34$; $p<0.0001$		
		- 2LL=1077.877; Nagelkerke $R^2=20.50\%$			- 2LL=1031.669; Nagelkerke $R^2=15.10\%$		
		H & L test ($\chi^2=8.153$, $p=0.419$)			H & L test ($\chi^2=15.570$, $p=0.049$)		
		Classification accuracy 92.2%			Classification accuracy 93.2%		

Analyses were performed only on ATYA population, that is, a sample of 2284 individuals aged 19-24 y/o. Regarding population background, we found that females were more at risk than males of depressive and anxiety disorders. Living in Brussels was associated with higher odds of depressive disorder only. Perceiving

a poor quality of their own level of social support was the most predictive factor for depression (OR 11.187, 95% CI 5.530-22.629, $p<0.0001$) and anxiety (OR 6.238, 95% CI 2.845-13.676, $p<0.0001$). Being a student was not impacting risk of DD or AD whereas, having a paid job prevented risk of DD (OR 0.282, 95%

CI 0.169-0.470, $p < 0.0001$) and AD (OR 0.552, 95% CI 0.330-0.924, $p < 0.024$). Living in urban areas reduced risk of depression only. Univariate analysis reveals that higher quintiles of household income were significantly associated with lower odds of DD and AD, but these relations disappeared in multivariate models. Finally, country of birth was not impacting risk of both disorders.

Concerning health behaviours, we found that cannabis consumers in past year, were twice higher at risk of both DD and AD. ATYA who have had problematic alcohol consumption in their lives were close to three times higher at risk of depression and anxiety.

When considering health services utilization, we found higher odds of DD and AD among those who went at least one time to the emergency department in the past year. Proportion of ATYA with a DD frequenting at least one time in past year an emergency department was 12.98% and 11.87% for those suffering from an AD. Number of contacts with the general practitioner was predictive of higher odds of depressive and anxiety disorders.

DISCUSSION

The first aim of this study was to describe evolution in time of the prevalence of depressive disorder (DD) and anxiety disorder (AD) among ATYA (19-24 y/o). Moreover, we paid attention to ATYA as being, or not, a more vulnerable group in term of mental illness (prevalence of DD and AD), in comparison with younger adolescents (15-18 y/o) or adults (25+ y/o). We found that, between 2008 and 2013, prevalence of DD significantly increased for ATYA but also for the two other age groups of population. In comparison with previous years, we observed that in 2013, prevalence of AD was significantly higher only among adults. For ATYA, trends of AD showed an increase in 2013, but differences were not significant. These results confirm previous epidemiological studies showing an increase, these last years, of mental illness among adolescents and young adults (Twenge et al. 2019). It is a complex task to disentangle whether the burden of mental illness is resulting from social, economic or cultural global evolutions (e.g. socio-economic uncertainties; changes in the family environment; school pressures), or may reflect changes in how adolescents perceive and report mental health complaints. Various factors may converge.

Regarding the question of specific vulnerability to mental illness, during transition to young adulthood, we observed contrasted results. Indeed, ATYA prevalence of DD was not significantly different from the 15-18 group. But in comparison with these younger adolescents, ATYA were more vulnerable to AD. A study shows that anxiety is one of the most prevalent common mental health issues among ATYA; transition from adolescence to young adulthood supposes experiencing new roles, increases levels of autonomy, and seeking to fit in socially (Essau 2004). These issues are specific to ATYA and may generate anxiety.

The second aim of this study was to identify risk factors associated with DD and AD among ATYA population. Three categories of predictors were considered, population background characteristics, health behaviours, and services utilization. When controlling for covariables, significant relation between higher household incomes and lower risk of DD or AD disappears. ATYA belonging to a more privileged socio-economic stratum may be less prone to DD or AD, but this operates through intermediate pathways.

Regarding gender-related risk, our findings confirm what is known from literature, that women are more likely to experience DD or AD than men (Zahn-Waxler et al. 2008). It appears that these differences already occur during transition to young adulthood. Interaction between, neurodevelopmental, social, and cultural factors may be put forward to explain gender-related risk of mental illness.

Experiencing a poor quality of social support was the most predictive factor for both DD and AD. It is imprudent to confirm a direct causal relation between weak social support and mental illness, indeed this relation is more likely to be circular. We know that social ties and networks play a beneficial role in the maintenance of psychological well-being (Kawachi & Berkman 2001). Development of positive relations to peers is a crucial stake in the perspective of social integration of ATYA, those who fail may be at risk of distress, moving sometimes to mental illness. According to the "social sharing of emotion" theory (Rimé et al. 1998) the fundamental psychological need of giving meaning to life experiences is nourished through social sharing of emotions with significant peers. Objective or subjective weaknesses in ATYA social support may deteriorate the process of social sharing of emotions. This may be dramatic for adolescents in transition whom are fully dealing with worrying situations which precisely necessitate possibility to share concerns with peers. One alternative mean of social integration is work. Odds of mental illness among ATYA having a job were significantly reduced. Supporting a quick inclusion of ATYA in the labour market should be reinforced to prevent them from psychological distress.

Consumption of cannabis in the past year or long term alcohol misuse were both two significant predictors of DD and AD. Here again it is complicated to disentangle if this relation is linear or circular. Late-adolescence is known as a "sensation-seeking" stage for many young people (White et al. 2006). Alcohol and cannabis are highly available, and many ATYA have experienced these products without developing a misuse or any addiction. It is relevant to explore with ATYA their relation to alcohol or cannabis; these products may be particularly detrimental in case, in which they are used as an avoidance strategy with regard to questions raised by transition process.

One concern of this study was how best to organize mental healthcare for ATYA. General practice and emergency rooms may be relevant places to organize detection, orientation and, prevention of ATYA mental illness. Indeed, we observed that risks of both DD and AD were significantly multiplied among ATYA frequenting

more often their general practitioner (GP). Moreover, ATYA who have had a contact with an emergency department in the last year were also more at risk of DD or AD. As prevention needs time and continuity, it should take place in primary care. GPs should be sensitized to risk factors of mental illness among ATYA (i.e. gender-related effect, poor quality of social support, alcohol or cannabis misuse, job-seeking). Emergency departments should focus on detection of ATYA mental illness, and on orientation to the most relevant trajectory of care.

One limitation of the study is that data was extracted from a national health survey that lacks specificity regarding mental illness indicators. More accurate mental health outcomes and, theoretically grounded potential risk factors of mental illness during transition are necessary to build valid intervention aiming to reduce risk of mental illness during transition to young adulthood. Further researches should confirm trends observed in this study and, identify factors playing a role in mental illness trends evolutions among ATYA. Longitudinal designs may be considered. In international contexts, ATYA should become a specific sub-group of population for which mental illness is regularly monitored in relation with broader determinants of mental health. Also, specific mental health pathways should be developed for ATYA.

CONCLUSION

This study shows that prevalence of mental illness among Belgian ATYA appears to have worsened in time since 2008. In comparison with younger adolescents, ATYA are more vulnerable to AD; prevalence of DD is equivalent in both age groups. Some adverse and protective risk factors were identified and discussed in a way to improve access, continuity and mental healthcare pathways for Belgian ATYA. We advocate for a quick detection of mental illness among ATYA and a provision of suitable care. This is essential since psychological difficulties arising during transition to young adulthood may have cascading implications; it jeopardizes young adults' personal development and social integration.

Contribution of individual authors:

Lepièce Brice conceived the study, performed statistical analysis, and drafted the manuscript.

Lepièce Brice, Nicolas Zdanowicz, Emmanuel de Becker, Philippe de Timary & Vincent Lorant all made substantial contributions to interpretation of data and revision of the manuscript.

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References

1. Beesdo-Baum K & al.: *The 'Early Developmental Stages of Psychopathology (EDSP) study': a 20-year review of methods and findings. Soc Psychiatry Psychiatr Epidemiol* 2015; 50:851-866
2. Costello J, Egger H, Angold A: *10-Year Research Update Review: The Epidemiology of Child and Adolescent Psychiatric Disorders: I. Methods and Public Health Burden. J Am Acad Child Adolesc Psychiatry* 2005; 44:972-986
3. De Girolamo G & al.: *Age of onset of mental disorders and use of mental health services: needs, opportunities and obstacles. Epidemiol Psychiatr Sci* 2012; 21:47-57
4. Essau A: *Prevention of substance abuse in children and adolescents. In Barrett M & Ollendick H (Eds.): Handbook of interventions that work with children and adolescents: Prevention and treatment, 517-540. Wiley, 2004*
5. Kawachi I, Berkman F: *Social ties and mental health. J Urban Health* 2001; 78:458-467
6. Kessler C, Amminger P, Aguilar-Gaxiola S, Alonso J, Lee S, Ustun B: *Age of onset of mental disorders: a review of recent literature. Curr Opin Psychiatry* 2007; 20:359
7. Malla A & al.: *Youth Mental Health Should Be a Top Priority for Health Care in Canada. Can J Psychiatry* 2018; 63:216-222
8. Polanczyk V, Salum A, Sugaya S, Caye A, Rohde A: *Annual Research Review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. J Child Psychol. Psychiatry* 2015; 56:345-365
9. Rimé B, Finkenauer C, Luminet O, Zech E, Philippot P: *Social sharing of emotion: New evidence and new questions. Eur Rev Soc Psychol* 1998; 9:145-189
10. Sawyer S, Azzopardi P, Wickremarathne D, Patton G: *The age of adolescence. Lancet Child Adolesc Health* 2018; 2:223-228
11. Twenge J & al.: *Age, Period, and Cohort Trends in Mood Disorder Indicators and Suicide-Related Outcomes in a Nationally Representative Dataset, 2005-2017; J Abnorm Psychol* 2019; 128:185-199
12. White R & al.: *Increases in alcohol and marijuana use during the transition out of high school into emerging adulthood: The effects of leaving home, going to college, and high school protective factors. J Stud Alcohol Drugs* 2006; 67:810-822
13. *World Health Organization: Comprehensive Mental Health Action Plan 2013-2020. Geneva, 2013*
14. Zahn-Waxler C, Shirtcliff A, Marceau K: *Disorders of childhood and adolescence: Gender and psychopathology. Annu Rev Clin Psychol* 2008; 4:275-303