Journal of Affective Disorders 221 (2017) 259–266

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research paper

Age of sexual initiation and depression in adolescents: Data from the 1993 Pelotas (Brazil) Birth Cohort

Helen Gonçalves[a,*], Ana L. Gonçalves Soares[a,b], Isabel O. Bierhals[a], Adriana K.F. Machado[a], Mayra P. Fernandes[a], Roberta Hirschmann[a], Thais M. da Silva[a], Fernando C. Wehrmeister[a], Ana M.B. Menezes[a]

[a] Postgraduate Program in Epidemiology, Federal University of Pelotas, Brazil
[b] MRC Integrative Epidemiology Unit at the University of Bristol, School of Social & Community Medicine, University of Bristol, Bristol, UK

ARTICLE INFO

Keywords:
Adolescent
Cohort studies
Coitus
Depressive disorder
Sexual and reproductive health
1993 Pelotas Cohort

ABSTRACT

Background: Studies have shown that sexual initiation at earlier ages increases the risk of depressive symptoms in adolescents. However, little is known about its association with major depressive episode (MDE).
Methods: The association between age of sexual initiation and MDE at 18 years was assessed in the 1993 Pelotas Birth Cohort using multiple logistic regression. Sexual initiation characteristics (age and type of partner) were assessed at the 15- and 18-years follow-up. The age of sexual initiation was evaluated in categories (11–14, 15–16, 17+ years). The type of partner was categorized into: boyfriend/ girlfriend, casual partner and other. MDE was assessed using the Mini International Neuropsychiatric Interview (MINI).
Results: From the 4027 adolescents assessed, the prevalence of MDE was higher in females (10.1%) than in males (3.4%), and 66.7% of the males and 58.6% of the females reported sexual initiation up to 16 years ($p < 0.001$). Female adolescents who had sexual initiation < 17 years had higher odds of MDE (15–16 years: OR 2.29; 11–14 years: OR 2.23), however no association was found for males. The type of partner in the first sexual intercourse was not associated to depression.
Limitations: Possibility of recall bias on the age of sexual initiation, and low statistical power for some analyses.
Conclusions: A positive association between age of sexual initiation and MDE was observed only in females. More investigation is needed to understand the mechanisms through which age of sexual initiation can affect the risk of depression and whether the association persists in adulthood.

1. Introduction

Physical, psychological and biological changes that occur during adolescence generally arouse questions, and stimulate concerns and behavioral changes regarding relationships and family (World Health Organization, 2016a). In this period of life other events, such as experimentations and challenges, as well as fears and instabilities arising from the affective-sexual relationships (among other contextual and family-related situations) can make adolescents more vulnerable to develop mental disorders (Assis et al., 2014). These disorders affect about 10–20% of children and adolescents in the world, and are the leading cause of disability among young people (World Health Organization, 2016c). When untreated, mental disorders can affect cognitive development and school performance (Millings et al., 2012), apart from other psychosocial consequences.

Depression is a multifactorial cause disorder (including genetic vulnerability and environmental risk factors), which is characterized by symptoms such as sadness, difficulty concentrating, loss of interest in activities that used to be carried out with satisfaction, fatigue, guilt, low self-esteem, and sleep or appetite changes (World Health Organization, 2016d). In 1990 and 2000 depressive disorders were a leading cause of global burden of disease (GBD) and the second cause of years lived with disability (YLDs), accounting for 8.2% (5.9% − 10.8%) of global YLDs in 2010 (Ferrari et al., 2013). Currently, depression is the leading cause of disability worldwide and it is still a major contributor to the overall GBD (World Health Organization, 2016b).

Associations between risk behaviors and depressive symptoms or depression have been largely reported in both males and females from different ages (Bromet et al., 2011; Lehrer et al., 2006; Madkour et al., 2010). Among these behaviors, early sexual initiation is a factor which can lead to other negative outcomes, such as suicidal ideation, sexually transmitted diseases (STDs), pregnancy, and adherence to other risk

* Correspondence to: Rua Marechal Deodoro, 1160, 3° piso, Pelotas/RS, CEP 96020-220, Brazil.
E-mail address: hdgs.epi@gmail.com (H. Gonçalves).

http://dx.doi.org/10.1016/j.jad.2017.06.033
Received 21 December 2016; Received in revised form 5 May 2017; Accepted 17 June 2017
Available online 23 June 2017

behaviors, like smoking and excessive consumption of alcohol (Hallfors et al., 2004; Jamieson and Wade, 2011; Mota et al., 2010; Rector et al., 2003; Savioja et al., 2015; Sussman, 2005).

Studies have shown that sexual initiation increases the prevalence of depressive symptoms in adolescents (Hallfors et al., 2005; Jamieson and Wade, 2011; Meier, 2007; Sabia, 2006; Spriggs and Halpern, 2008). The risk is higher in females (Hallfors et al., 2005; Jamieson and Wade, 2011; Meier, 2007; Sabia, 2006; Savioja et al., 2015; Spriggs and Halpern, 2008), as they are usually more influenced by sociocultural norms concerning sexual behavior, and having sex is frequently considered 'inappropriate' for girls but not for boys (Borges and Schor, 2005; Sanchez et al., 2012). In addition, mental changes can be influenced by low self-esteem, which is also more common among females (Kiviruusu et al., 2016)

Furthermore, the association of sexual initiation with adolescent's mental health seems to be affected by the type of relationship with the sexual partner (Meier, 2007; Mendle et al., 2013). If the relationship is serious and continues for a while after sexual initiation, it can be positive regarding mental health (Meier, 2007). However, having sex with a partner whose relationship does not involve commitment and/or is of short duration may affect negatively mental health (Meier, 2007; Mendle et al., 2013).

Most of the evidence available on the association between sexual initiation and depression comes from studies carried out in North-America (Jamieson and Wade, 2011; Mendle et al., 2013; Sabia, 2006; Vasilenko et al., 2016). In this sense, it is necessary to assess the association between age of sexual initiation and mental disorders in adolescents in different contexts, as both sexual initiation and mental health problems are influenced by socio-demographic and cultural factors. Thus, the aim of this study was to assess the association between age of sexual initiation and major depression in adolescents aged 18 years from a birth cohort in a middle-income country.

2. Methods

2.1. The sample

The 1993 Pelotas Birth Cohort recruited all children born alive in hospitals in the urban area of the city of Pelotas, Southern Brazil, between 1st January and 31st December 1993 (Victora et al., 2008). In that year 5265 births were recorded, and 5249 mothers consented to their children to take part in the study. Since the perinatal visit, subsamples of the cohort have been evaluated, and at 11 years the first attempt to interview the full cohort was made. At the 11-year follow-up 4452 adolescents were interviewed (87.5% of the original cohort), at the 15-year follow-up 4325 were assessed (85.7% follow-up rate), and at 18 years 4106 answered the questionnaire (81.3% follow-up rate) (Gonçalves et al., 2014). At the 11-year follow-up the interviews were carried out in the households, and at the 15- and 18-year follow-up the adolescents were interviewed at the headquarters of the study. The questionnaires used for the 1993 Pelotas Birth Cohort are available at < http://www.epidemio-ufpel.org.br/site/content/coorte_1993/ > . More detailed information on the methodology applied and the cohort follow-ups are described in other publications (Gonçalves et al., 2014; Victora et al., 2008).

For this study, only people with complete data on age of sexual initiation and depression were included (N = 4031).

2.2. Measurements

Major depressive episode (MDE) was measured at the 18-year follow-up using the Brazilian version (version 5.0.0) of the Mini International Neuropsychiatric Interview (MINI), a diagnostic interview instrument. The questionnaire has a recall period of 6 months, was validated for the Brazilian population, and has 0.92 of both sensitivity and specificity (Amorim, 2000; de de Azevedo Marques and Zuardi, 2008). The MINI was administered fully structured for trained psychologists who were blind to the exposure status.

Data on sexual initiation characteristics (age of sexual initiation and who was the first sexual partner) was obtained through an anonymized self-completed questionnaire at the 15- and 18-year follow-ups. To assess sexual intercourse, the following question was used: "have you ever had sexual intercourse?", and sexual intercourse was defined as penile penetration of the vagina or anus. If the adolescent answered affirmatively, it was then asked: "how old were you at your first sexual intercourse?" and "who was your first sexual intercourse with?", and the response options were: boyfriend/ girlfriend, sex worker, any relative, casual partner (a more open relationship, with less commitment than a boyfriend/girlfriend), housekeeper or another person. The responses were then categorized into: boyfriend/ girlfriend, casual partner and other. Information on age of sexual initiation was used from the 18-year follow-up in order to diminish exaggerated responses and to provide a more accurate information on the age of the first sexual initiation. When the data was missing at 18 years, it was obtained from the 15-year questionnaire (n = 31). Information on who was the first sexual partner was obtained at the 15-year follow-up from those who reported having had sexual initiation.

2.3. Covariates

Family income of the month prior to the delivery (quintiles), maternal schooling (0–4 years; 5–8 years; 9–11 years; 12+ years), and maternal age (years) were assessed at the perinatal visit. Quintiles of family income were generated based on the full original sample. Skin color (white, black, and mixed), alcohol experimentation (yes/no), smoking experimentation (yes/no), and maternal mental health were assessed at the 11-year follow-up visit. Maternal mental health was measured using the short-version of the Self-Reporting Questionnaire (SRQ-20), and it was divided into two groups: no common mental disorders (a score less than or equal to seven) and common mental disorders (a score equal to or greater than eight) (Mari and Williams, 1986). Pubertal development was assessed at 15 years using Tanner stages (Tanner, 1966) through an anonymized self-completed questionnaire. Age of menarche was assessed at the 18-year follow-up.

2.4. Statistical analysis

Initially, the distribution of the covariates was described, and the prevalence of depression was assessed according to them. Heterogeneity chi-squared test was used to evaluate the difference among the categories, and linear trend was used when appropriate. Logistic regression was used to calculate crude and adjusted odds ratios (OR) and their respective 95% confidence interval (95% CI) for the association between sexual initiation characteristics and depression, and Wald test was used to estimate the significance. We *a priori* decided to stratify the analysis by sex. The analysis was adjusted for all the covariates defined above; age of menarche was used only for analysis carried out for females. The significance level adopted was 5%.

The analyses were performed in the software Stata 14.1® (Statcorp, College Station, TX, USA).

2.5. Ethical approval

The 18-year follow-up of the 1993 Pelotas Cohort was approved by the Research Ethics Committee of the Medical School of Federal University of Pelotas under protocol 40600026. After agreeing to take part in the study, the adolescents provided written informed consent.

3. Results

Fig. 1 shows the description of the study population at each follow-up of the cohort. Those excluded from the analysis due to missing data