Author's response to reviews

Title: The association between adolescents' health and disparities in school career: a longitudinal cohort study

Authors:

Ellen Uiters (ellen.uiters@rivm.nl)
Erica Maurits (e.maurits@nivel.nl)
Mariël Droomers (m.droomers@amc.uva.nl)
Marieke Zwaanswijk (m.zwaanswijk@nivel.nl)
Robert A Verheij (r.verheij@nivel.nl)
Fons Van der Lucht (fons.van.der.lucht@rivm.nl)

Version: 5
Date: 21 August 2014

Author's response to reviews: see over
Authors response to reviews

Manuscript: 1914709063127179

Title: The association between adolescents' health and disparities in school career: a longitudinal cohort study

Authors:
Ellen Uiters: ellen.uiters@rivm.nl
Erica Maurits: e.maurits@nivel.nl
Mariël Droomers: m.droomers@amc.uva.nl
Marieke Zwaanswijk: m.zwaanswijk@nivel.nl
Robert A. Verheij: r.verheij@nivel.nl
Fons van der Lucht: fons.van.der.lucht@rivm.nl

Version 2, 21 August 2014
Author’s response to the reviewers: see below
The Biomed Central Editorial Team

Manuscript: 1914709063127179- The association between adolescents' health and disparities in school career: a longitudinal cohort study

Thank you for considering the publication of our manuscript in your journal. Please find enclosed a revised version of the manuscript. In this letter, we will outline how we have changed the paper in response to the issues raised by the two reviewers.

We hope these changes will adequately meet the comments. We look forward to hearing from you after you had a chance to examine this version of the paper.

Sincerely,

Marieke Zwaanswijk, PhD
NIVEL, Netherlands Institute for Health Services Research
P.O. Box 1568
3500 BN Utrecht
The Netherlands
Reviewer 1: Ingibjörg Thorisdottir

MINOR COMMENTS

1. Line 76-most studies (not studied)
   • Done (is now line 89)

2. Line 76-78; This line needs citations
   • Done (is now line 91)

3. Limitation that educational career is measured at age 16-18. Is it possible that respondents take a break and then finish their education?
   • It is indeed possible that respondents temporarily drop out of secondary school and return to the educational system after some time. We have addressed this issue in the limitation section (lines 319-322): In addition, we were not able to investigate a delayed qualification for respondents initially dropping out and returning to the educational system afterwards. Previous research showed that approximately 2% of the students in secondary education drop out, of whom 20% return and graduate within 5 years.

4. It is confusing how the respondents were selected. It appears that they were selected from an electronic pool of participants who have already seen a specialist (GP).
   • In the Dutch health care system, virtually all residents are listed within a single general practice (also the individuals who do not visit their GP in a given period of time) and the majority of the population (77%) has at least one contact with the GP per year. Data from electronic health records of GPs therefore provide a unique opportunity to investigate the health of the Dutch population. We used data derived from electronic health records of a sample of Dutch general practitioners participating in the NIVEL Primary Care Database. This means that we used data of all patients listed in these participating practices, we did not select patients who contacted the GP. See lines 104-108 (In the Dutch health care system.. NIVEL Primary Care Database ...).

5. Line 130; 180: Not clear why urbanization is discussed? How does that influence the data? What is the premise for including this variable in the analysis?
   • The following is added to the manuscript (lines 202-204): This variable was included because the level of urbanisation has been found to be related to school career (e.g. higher dropout rate in urban areas) as well as individual health status.

6. Line 135-137: Ethical clearance needs to be rewritten.
   • We had an extensive discussion with the editorial office about the ethical clearance paragraph, and we have changed this paragraph in line with their comments (lines 152-155): “Dutch law allows the use of electronic health records for research purposes under certain conditions. According to Dutch legislation, neither obtaining informed consent nor approval by a medical ethics committee is obligatory for this kind of observational studies (Dutch Civil Law, Article 7:458).[29] We have also added a reference to the legal article in question (line 155). Furthermore, the linkage between the datasets was performed by Statistics Netherlands. This institution is legally allowed to do so in her function as a trusted third party (Statistics Netherlands Act) (see lines 111-113). Taken the foregoing into account, the editorial office has decided that ethical clearance was adequately addressed.

7. Line 175: Type of household, was the type living with a single parent or not? If so, then falling into the not living with a single parent does not give a clear picture of where the adolescent lives (both parents, one biological parent and one step parent, extended family, close family, another living form). It would be better to have living with both biological parents as that is generally a protective factor.
• Unfortunately, the Dutch population register does not contain more detailed information about the type of household an adolescent is living in, other than single parent household or not (see line 196).

8. 237 Reference c.f. if it is supposed to be compare then it should be cf.

   • Done (is now line 261)

9. The discussion needs to be more in line with previous research and what this research is adding.

   • In reaction to the first comment of reviewer 2, we have added a paragraph describing relevant previous findings (lines 266-273: A large prospective cohort study …impaired school functioning.)

   • We have added paragraphs describing the additional value of our study (lines 323-332): Our study… perceived health status.

10. 326: Secondary

   • Done (is now line 361)

**MAJOR COMPULSORY REVISIONS**

1. Line 50: The authors should consider building the bases for the research in a more concrete manner. The first sentence (line 50) does not make a whole lot of sense since social mobility is not discussed any further.

   • The following is added to the introduction to further explain social mobility (lines 68-69): This process of health-related social mobility contributes to social class differences in health.

   • To further explain the rationale for our study, we have added more information about the current state of the evidence concerning social selection and its main determinants, see our reaction to the first comment of reviewer 2.

2. Line 55-56; 71: The question posed by the authors is not clearly justified (line 55-56). They mention that educational career is affected by health status, apart from other variables. It is important to list some of these other variables for those not familiar with the subject. Is it possible that other variables than health status are more likely to predict educational outcomes? The same goes for the hypothesis (line 71), the authors decide to focus on one possible pathway without clearly justifying why this pathway instead of another pathway.

   • Other variables that may affect adolescents’ school career have been added (lines 56-58): A person’s educational career is not only associated with individual variables, such as cognitive abilities and motivation, but also with his background, such as family resources and socioeconomic status.[5]

   • The following was added to clarify the rationale for the chosen pathway (lines 74-87): Investigating the association between health and educational achievement … their educational career.

3. Line 195-199: Do not reiterate data already shown in table

   • Done (lines 220-221: Demographic and socioeconomic characteristics of the study population are presented in Table 1.)

4. The authors conclude that physical health selection does not play an important role in influencing the school career of Dutch adolescents. I think that the data available might not have been the best to answer this question as noted above. The results reveal an association between school career and number of GP contacts, but since the data is pooled from participants that have already seen a specialist there is no way of knowing if that is an indicator since there is no comparison to individuals that have not seen a specialist.
• This comment relates to the previous comment 4 of this reviewer. We have clarified that we used routinely recorded data from general practices, including data from individuals who have not consulted their GP. This is possible because virtually every individual in the Netherlands is listed in a particular GP practice. See lines 104-108 (In the Dutch health care system., NIVEL Primary Care Database …). 

5. The methods chosen are quite simple and not appropriate to examine the modifying effects of parental SES, they control for those effects instead of running two separate models one with and one without parental SES. The authors need to focus more on their research questions (line 81-84) in the report of results.
• We added the following sentences to clarify the way in which our analyses were performed, lines 207-210: For each of the three indicators of adolescents’ school career, we first performed logistic multilevel regression analyses to investigate the association with adolescents’ health status. Parental socioeconomic position was subsequently added to the model, followed by the demographic variables (sex, ethnicity, and level of urbanisation of the neighbourhood). This allowed us to compare our results for models with and without parental socioeconomic position and demographic variables. The association between the number of GP contacts for acute psychosocial problems and school career remained significant after adding parental socioeconomic position to the model (lines 279-281: most health problems did not show a significant association with adolescents’ school career. Taking into account parental socioeconomic position did not change this general picture.) 

We subsequently investigated the potential modifying effect of parental socioeconomic status on the association between health status and school career by including interaction terms between parental socioeconomic position and health status in our analyses (lines 211-214: To investigate the potential modifying effect of parental socioeconomic status on the association between health status and school career, interaction terms between parental socioeconomic position and health status were included (only for the health problems which were significantly associated with school career). 

• To clarify the results section, we have added some sentences to guide the reader:
  o Line 220-221: Demographic and socioeconomic characteristics of the study population are presented in Table 1.
  o Line 228: Table 3 presents data regarding the school career of the study population.
  o Line 238: we added a reference to research question 1
  o Line 250: we added a reference to research question 2

6. Line 242-244: This is quite an overstatement that I would like the authors to back up a little better.
• Previous research has shown that the number of GP contacts for adolescent psychosocial health problems has increased in recent years (see reference 45). Since we found an association between psychosocial health problems and educational career, this may imply that the number of adolescents at risk for health-related selection will also increase in the coming years. To stress the hypothetical nature of this statement, we have adapted it (this may imply… instead of this implies…, lines 277-278 and 336-339).
• Moreover, we elaborated on the current state of the evidence concerning social selection and its main determinants (see also comment 1 of reviewer 2): A large prospective cohort study showed that childhood psychological disorders had a far more important impact on various aspects of adult life (e.g., the ability to work, social mobility, income and marriage stability) than childhood physical health problems (lines 266-269).

7. Quality of written English: Needs some language corrections before being published
• The manuscript has been checked by a translator.
Reviewer 2: George Giannakopoulos

MAJOR COMPULSORY REVISIONS

1. The thesis of “social selection” or “social drift” argues that mental disorders hinder social attainment (e.g. by interfering with school performance) and lead to a downward shift in SES. In support of this thesis, a recent report from the 1958 British birth cohort highlights the large effects that poor mental health in childhood had on intergenerational and within-generation social mobility at age 50 (Goodman, Joyce, Smith, 2011). Likewise, previous analyses of the same cohort reported that childhood internalizing and externalizing disorders were associated with reduced upward social mobility and manual adult social-economic position at age 45 (Stansfeld, Clark, Rodgers, Caldwell, Power, 2011). Previous research has suggested that social causation and social selection processes vary in importance between categories of mental disorders (Miech, Caspi, Mofitt, Wright, Silva, 1999; Johnson, Cohen, Dohrenwend, Link, Brook, 1999; Dohrenwend, Levav, Shrout, Schwartz, Naveh, Link, Skodol, Stueve, 1992). Externalizing disorders in particular (Miech, Caspi, Mofitt, Wright, Silva, 1999; Johnson, Cohen, Dohrenwend, Link, Brook, 1999) seem to be associated with low SES during childhood and adolescence while the relationship between low SES and internalizing disorders partly seems to be explained by comorbidity with externalizing problems (Amone-P’Olak, Burger, Ormel, Huisman, Verhulst, Oldehinkel, 2009). Although both externalizing and internalizing disorders are likely to be detrimental to school results, externalizing disorders in particular could be key determinants of educational problems (Miech et al, 1999; Johnson et al., 1999). A large body of research on children, adolescents, and young adults indicates that externalizing disorders are closely related to significant academic underachievement and also to impaired school functioning (including absenteeism, grade retention and dropout) (McLeod & Kaiser, 2004; Barbaresi, Katusic, Colligan, Weaver, Jacobsen, 2007; Breslau, Lane, Sampson, Kessler, 2008; Miech et al, 1999). It would be very meaningful if the authors address all this previous knowledge in the background section of the paper and in the discussion of their findings.

- We thank the reviewer for his valuable suggestions. This comment relates to the major compulsory revisions 1, 2 and 6 of the first reviewer. We have elaborated on the current state of the evidence concerning social selection and its main determinants in the introduction and discussion sections of the manuscript. The following sentences have been added:
  o lines 56-58: A person’s educational career is not only associated with individual variables, such as cognitive abilities and motivation, but also with his background, such as family resources and socioeconomic status.
  o lines 76-79: For instance, Chandola et al. distinguish six possible pathways linking education to health.[19] The main variables addressed in these pathways are: cognitive abilities, childhood socioeconomic circumstances, child and adolescent health, adult socioeconomic circumstances, health behaviours, and a person’s sense of control.
  o lines 92-94: Adolescent education and health are of substantial importance for adult development and psychosocial functioning, which, in turn, have a major impact on adults’ socioeconomic status.
  o Lines 266-273: A large prospective cohort study showed that childhood psychological disorders had a far more important impact on various aspects of adult life (e.g., the ability to work, social mobility, income and marriage stability) than childhood physical health problems.[39] Although both childhood emotional and behavioural disorders are suggested to be associated with reduced upward social mobility, most studies emphasise the relative importance of behavioural disorders with respect to academic underachievement and impaired school functioning.[40-44]
2. It would be very helpful for the reader if the authors gave more information defining the term "acute psychosocial health problems" in the abstract and methods section.
   • We have added some examples of the health problems included in each cluster in the Methods section and we refer to appendix A for more details (lines 176-186).
   • We have added a description of the most frequently occurring diagnoses within the cluster “acute psychosocial health problems” to the Results section (lines 246-248: The most frequently occurring diagnoses within the cluster “acute psychosocial health problems” were bedwetting/enuresis and overactive/hyperkinetic child.) and to the abstract (lines 39-42: However, adolescents who had more frequent contact with their general practitioner for acute psychosocial problems (e.g. enuresis or overactive/hyperkinetic disorder), were less likely to complete their secondary education, also after adjustment for parental socioeconomic position.)

3. Please explain the term "level of entry".
   • An explanation of the term “level of entry” has been added, lines 137-138: Level of entry is referring to the type of secondary education that adolescents start after finishing their primary education.