

## Article

# Socioeconomic Disadvantage among Adolescents: Associations between Having Relatives with Severe Health Conditions, Parental Work Status, and Poor Mental Health

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**Abstract:** Psychosocial risk factors, such as socioeconomic disadvantage and having close relatives with severe health conditions (RSHCs), may negatively impact an adolescent's life. This study aimed to investigate the associations between adolescent experiences with RSHCs (no, one or several RSHCs), parental working status (PWS) (both parents working (both PW) or having  $\geq 1$  parent not working ( $\geq 1$  PNW)) and the composite variable of RSCHs/PWS in relation to self-reported poor mental health. In 2020, population-based data on 15–18-year-olds ( $n = 3509$ ) were collected from schools in Sörmland, Sweden. Relationships between the composite variable of RSCHs/PW and poor mental health were determined through logistic regression analyses in three different models. Odds ratios (ORs) are separately reported for girls and boys. Girls reporting several RSHCs/ $\geq 1$  PNW displayed an OR of 5.05 (95% CI 2.82–9.04) in comparison with the reference group with no RSCHs/both PW when adjusting for grade and ethnicity. The corresponding OR for boys was 2.26 (95% CI 1.46–3.49). Further adjustments for protective factors for mental health attenuated the associations with poor mental health. In conclusion, adolescents with RSHC experiences in combination with parental unemployment are at increased risk of developing their own poor mental health, making this group particularly vulnerable.



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## 1. Introduction

Social differences in health reflect an unfair distribution of health risks and resources; therefore, they are considered as an unjust and avoidable systematic cause of differences in health [1]. Young people from socioeconomically disadvantaged families are exposed to stressful worries and are two to three times more likely to develop mental health problems [2] or psychopathology [3] than peers from socioeconomically advantaged families. One of the public health goals, both globally [4] and in Sweden [5], is to reduce socioeconomic differences in health, which is captured in the plan of action related to the goals of no poverty, good health, and reduced inequalities, as stated in the 2030 Agenda for Sustainable Development [6]. Youth with experiences with relatives with severe health conditions (RSHCs) constitute a large group in a vulnerable life situation in several ways, where one may be a negative influence on socioeconomic situation [7–9]. Nearly one in ten young people have a parent with a somatic condition [10] and one in five have a parent with mental illness [11–13]; therefore, experiences with RSHCs are common among youth. A Swedish study found that one in ten adolescents reported alcohol and/or other drug problems among their parents during their childhood [14]. Moreover, 7–17% of young people are estimated to have a sibling with a chronic physical or mental condition [15].

If a family member has a severe health condition, this often leads to a decrease in the family's economic status and a disadvantaged socioeconomic situation [3,11]. The combination of lower socioeconomic status (SES) and parental depression is also linked to an increased risk of ill-health in adolescents [16]. Additionally, social benefits are more common among families where one of the parents has died [9]. The SES among young people may be measured using the parents' educational level, income, or employment status [17]. In this study, the adolescents' SES was assessed as having parents that work (PW).

Having experiences with RSHCs may be stressful in other ways, negatively impacting everyday life and health in the short and long terms [8,18–20]. Adolescents with RSHC experiences often have poorer school outcomes [21] and less meaningful leisure activities [22], and they are at increased risk of health-compromising behaviors [23]. We previously showed that adolescents, and especially girls, with several RSHC experiences have significantly increased odds ratios (ORs) for poor mental health [8] as well as for non-suicidal self-injuries [19].

Poor mental health has been defined as the part of mental illness that does not meet the requirements for psychiatric diagnoses [24]. It often occurs as a normal reaction to stress in life, depending on the type and to what extent it affects the person's ability to cope with everyday life. Poor mental health is often transient, but, for some individuals, it is long-lasting [24]. In adolescence, the delicate transition from childhood to an independent and secure adulthood may be impaired by longstanding mental ill-health [25]. Poor mental health is common. In Sweden, three in four girls and almost half of the boys reported symptoms such as anxiety or worry in 2022 [26]. Adolescents' poor mental health is seen as a global public health challenge [27] that is considered preventable [25,28]. Important areas of health promotion among adolescents include poor mental health and depression, health risk behaviors, parent–adolescence relationships, social exclusion, poor nutrition, and health inequalities [29].

In this study, we aimed at further exploring the associations between psychosocial risk factors, combining adolescents' experiences with RSHCs and parental work status (PWS), in relation to self-reported poor mental health. The following study questions were addressed: What are the relationships between RSHCs/PWS and poor mental health among girls and boys, separately? How do the protective factors against poor mental health influence this association? To find new approaches to prevent the adverse trajectory of early life psychosocial disadvantage, further knowledge and understanding of different mediating pathways is needed. To the best of our knowledge, the present approach has not been applied before.

## 2. Materials and Methods

### 2.1. Sörmland County

Roughly 300,000 persons live in the county of Sörmland, Sweden, of which 18,400 are 15–19 years of age [30]. The largest cities are Eskilstuna and Nyköping, with 100,000 and 58,000 inhabitants, respectively. About half of the population lives in rural areas or in smaller towns. Compared with Sweden as a whole, the county of Sörmland is socioeconomically disadvantaged, characterized by higher unemployment (9.4% versus 6.9% in Sörmland compared with Sweden, 2022), lower educational level (44% versus 52% of women in Sörmland have upper secondary education compared with those in Sweden as a whole) and lower income level. In 2021, the annual mean income was SEK 339,800 for men in Sörmland and SEK 373,200 for men in Sweden. The county of Sörmland has the highest relative child poverty (14%) in Sweden. The proportion of non-Swedish-born inhabitants varies between 15 and 25% in the nine municipalities in the county.

### 2.2. Life and Health in Youth Survey

We used secondary data from the Life and Health in Youth Survey, containing information on adolescents in the 9th grade (Y9) (age 15–16 years) and 2nd year of upper secondary school (Y2U) (age 17–18 years) in the county of Sörmland. The Department of

Public Health and Welfare in the County Council of Sörmland conducted the survey during February–March 2020, in collaboration with the Centre of Clinical Research in Sörmland. The data were collected using a web-based questionnaire, which the adolescents filled out anonymously at school. The parents received information about the study in writing beforehand, e.g., that it was voluntary for the adolescents to participate, that the questionnaire was answered anonymously, and that the parents should contact the school if they did not want their child to participate (see below for more details). The Life and Health in Youth Survey is primarily used to monitor public health in adolescents and reflects important areas related to the model of social determinants of health [31]. Adolescents attending Y9 and Y2U responded to separate questionnaires, the younger ones receiving a survey with 77 questions, and the older ones answering 85 questions, exploring various aspects of their living conditions, lifestyle, social network, and health. Corresponding questions had the same wording for respondents in both grades.

At the time of the survey, the school personnel distributed codes for accessing the survey. They also informed the adolescents orally that participation was voluntary, that they could leave the survey at any time, that they could skip questions they did not want to answer, and that the data would be used according to prevailing laws for data handling. They also showed an information video before the adolescents started to fill out the questionnaire and the same information was presented in text on the first page of the web-based questionnaire. In Sweden, adolescents older than 15 years can decide for themselves concerning participation in studies [32]. Therefore, a completed questionnaire was regarded as the adolescents' informed consent to participate. This study was approved by the Regional Ethical Review Board, Stockholm (Dnr 2017/709-32). Several previous studies focusing on adolescents' health have used data from the Life and Health Surveys [8,19,33,34].

The 2020 questionnaire was answered by 4159 adolescents, and the response rates were 74% for Y9 and 50% for Y2U. In this study, we used questions that were the same for both grades. The questions about RSHC experiences were declined by 462 adolescents and the questions on PWS by 35 adolescents. An additional 153 adolescents were excluded due to incomplete data (gender  $n = 75$ , ethnicity  $= 42$ , enjoying school  $n = 16$ , economic stress  $n = 12$ , getting good sleep  $n = 8$ ). A total of 3509 adolescents were included in this study.

### 2.3. Exposure: Composite Measure of RSHCs/PWS

In the county of Sörmland, an extended definition of children as close relatives is used in clinical practice. This definition implies that a child and their parents/caregivers are the ones to decide who is considered a close relative or person having a severe health condition or who has died. The definition of a close relative in this study was based on the definition used in the county of Sörmland and uses four questions on different RSHC experiences: "Do you have a family member or a close person that has: (1) a severe physical illness/injury/impairment, (2) a severe mental illness and/or psychiatric disorder/impairment, (3) a substance abuse/gambling disorder, or (4) died?".

These questions allowed for the classification of the adolescents into different groups of RSHC experiences. The first group consisted of adolescents reporting one of the above RSHC experience groups, called "one RSHC". The second group of adolescents reported having experiences with two to four of the RSHC groups, called "several RSHCs". Adolescents reporting no RSHC experiences were classified as "no RSHCs". Parental work status (PWS) was defined based on the combined questions of the mother/caregiver and father/caregiver. The questions were "What does your mother/caregiver do?" and "What does your father/caregiver do?", with the response options being "working", "studying", "unemployed", "on sick leave", "other/I don't know", and "have no mother/caregiver, father/caregiver". Adolescents reporting both parents/caregivers as being either "working" or "studying" were classified as both parents working (both PW). Adolescents reporting any of the options "unemployed", "on sick leave", "other/I don't know", and "have no mother/caregiver, father/caregiver" were classified as having at least one parent not working ( $\geq 1$  PNW). RSHC experiences and PWS were used to create the composite measure

RSHCs/PWS with the following categories: no RSHCs and both PW (reference group), no RSHC and  $\geq 1$  PNW, one RSHC and both PW, one RSHC and  $\geq 1$  PNW, several RSHCs and both PW, and several RSHCs and  $\geq 1$  PNW.

Our outcome, poor mental health among the adolescents, was measured with the following question: "During the last 12 months, have you been feeling down?" which was followed by the explanation: "By feeling down, we mean, that during at least two weeks in a row, you have been feeling stressed, sad, depressed, worried, lonely, bullied, anxious or have had suicidal thoughts". The response options were "yes" or "no".

Gender was specified as "girl" or "boy", and the few adolescents not answering or choosing "neither/nor" were omitted from further analyses. Grade was used as a proxy for age, Y9 (15–16 years) or Y2U (17–18 years), and "Ethnicity" was classified as "Swedish" ("born in Sweden" or "having at least one Swedish parent") or "non-Swedish" ("born outside of Sweden" or "having both parents born outside of Sweden"). These variables were considered background factors.

In addition to parental work status, additional covariates related to the adolescents' socioeconomic status were included. "Economic stress" was measured using the question "are you worried about your family's economy?", and classified as "yes" ("yes, quite worried", or "yes, very worried") or "no" ("not especially worried" or "not worried at all"). "Living with both parents" was measured using "Whom do you live with?", and classified into "living with both parents" ("living with both parents who live together"), or "not living with both of my parents" ("living with my mother", "living with my father", "living with my mother and her partner", "living with my father and his partner", "living in a family home", "living with other caregiver", or "I live alone").

Additional covariates included were: "Enjoying school", which was measured using the question "Do you like school?" and classified into "yes" ("very much" and "much") or "no" ("neither/nor", "not that much", or "not at all"); "Feeling safe at home" was measured using the question "Do you feel safe at home?", and answers were dichotomized into "yes" ("yes, always") or "no" ("yes, often" or "no, seldom or never"). Furthermore, "Feeling happy with leisure" was measured using the question "How do you like your leisure time?", with answers classified into "yes" ("I'm very happy" or "I'm quite happy") and "no" ("I'm neither happy nor unhappy", "I'm not that happy", or "I'm unhappy"). "Having dinner every day" was measured with "How often do you eat dinner?" and classified into "yes" ("every day") or "no" ("4–6 times a week", "1–3 times a week", or "never"). "Getting good sleep" was measured using the question "during the past 3 months, how often have you had restless sleep?", and the answers classified into "getting good sleep" (having restless sleep "seldom" or "never") or "poor sleep" (having restless sleep "once a month", "once a week", "more than once a week", or "almost every day"). The covariates were recoded to reflect a protective role against poor mental health.

#### 2.4. Statistical Analyses

First, descriptive statistics were used to describe the adolescent study population. Pearson's chi-square test was used to test the correlations between RSHCs, PWS and RSHCs/PWS, separately, and poor mental health. Analyses were separately performed for girls and boys. Next, logistic regression analyses were performed to analyze the association between RSHCs/PWS and poor mental health. The logistic regressions were performed in three different models and conducted separately for girls and boys. In the first model, the background factors grade and ethnicity were controlled. In the second model, background factors (grade and ethnicity) and socioeconomic variables (economic stress and living with both parents) were controlled. In the third model, protective factors against poor mental health (enjoying school, feeling safe at home, feeling happy about leisure, having dinner every day, and getting good sleep) were controlled. The results are presented as odds ratios (ORs) with 95% confidence intervals (CIs). We used Nagelkerke to describe the explained variance and likelihood ratio chi-square test for model fit. All statistical analyses were conducted with SPSS version 29.

### 3. Results

Our study population consisted of almost equal proportions of girls (48%) and boys (52%). Grade, ethnicity, living with both parents, and parental work status (PWS) were similarly distributed between genders. Most adolescents reported no economic stress and living with both parents. Overall, the adolescents were generally satisfied with their lives. However, girls reported a more vulnerable situation, with lower proportions reporting enjoying school, feeling safe at home, being happy with leisure, and having dinner daily than boys (Table 1).

**Table 1.** Distribution of background factors and covariates in the adolescent study population by gender.

| Included Variables              | Girls<br>n (%) | Boys<br>n (%) |
|---------------------------------|----------------|---------------|
| Total                           | 1698 (48)      | 1811 (52)     |
| Background variables            |                |               |
| Grade                           |                |               |
| Y9 (15–16 years)                | 937 (55)       | 940 (52)      |
| Y2U (17–18 years)               | 761 (44)       | 871 (48)      |
| Ethnicity                       |                |               |
| Swedish                         | 1271 (75)      | 1391 (77)     |
| Non-Swedish                     | 427 (25)       | 420 (23)      |
| Socioeconomic factors           |                |               |
| No economic stress <sup>§</sup> |                |               |
| Yes                             | 1412 (83)      | 1613 (89)     |
| No                              | 286 (17)       | 198 (11)      |
| Living with both parents        |                |               |
| Yes                             | 1018 (60)      | 1115 (62)     |
| No                              | 680 (40)       | 696 (38)      |
| Protective factors              |                |               |
| Enjoying school                 |                |               |
| Yes                             | 1171 (69)      | 1416 (78)     |
| No                              | 527 (30)       | 395 (22)      |
| Feeling safe at home            |                |               |
| Yes                             | 1447 (85)      | 1689 (93)     |
| No                              | 251 (14)       | 122 (7)       |
| Feeling happy with leisure      |                |               |
| Yes                             | 1157 (68)      | 1502 (83)     |
| No                              | 541 (32)       | 309 (17)      |
| Having dinner daily             |                |               |
| Yes                             | 1308 (77)      | 1603 (89)     |
| No                              | 390 (22)       | 208 (17)      |
| Getting good sleep <sup>§</sup> |                |               |
| Yes                             | 1288 (65)      | 1592 (88)     |
| No                              | 410 (15)       | 219 (12)      |

<sup>§</sup> Recoded to reflect a protective role.

About half of the adolescents, with a certain predominance of girls, reported RSHC experiences (girls 58%, boys 48%). PWS, in the form of  $\geq 1$  PNW, was reported by two out of ten adolescents (girls 21%, boys 17%). Poor mental health was reported by most of the adolescents (girls 69%, boys 41%).

Experiences with RSHCs was significantly associated with poor mental health among both girls and boys ( $p$ -values  $< 0.001$ ). Correspondingly, PWS was significantly associated

with poor mental health among boys ( $p < 0.001$ ) but not among girls ( $p = 0.06$ ). The proportions of the composite measure of RSHC/PWS varied between genders. For example, one-third of the girls and almost half of the boys belong to the group “no RSHC/both PW” (our reference group), the associations with poor mental health were statistically significant for all the composite measures including one or more experiences with RSHCs, regardless of PWS, for both genders, with all respective  $p$ -values  $< 0.001$  (Table 2).

**Table 2.** Distribution of poor mental health among adolescents with varying experiences with relatives with severe health conditions (RSHCs), parental work status (PWS), and the composite measure RSHC/PWS by gender (n = 3509).

|                             | Girls<br>n (%)     |                       |              | Boys<br>n (%)      |                       |
|-----------------------------|--------------------|-----------------------|--------------|--------------------|-----------------------|
|                             | Poor Mental Health | No Poor Mental Health | $p$ -Value * | Poor Mental Health | No Poor Mental Health |
| Total                       | 1167 (69)          | 531 (31)              |              | 750 (41)           | 1061 (59)             |
| RSHCs                       |                    |                       | $<0.001$     |                    |                       |
| No RSHCs                    | 422 (36)           | 281 (53)              |              | 332 (44)           | 617 (58)              |
| One RSHC                    | 352 (30)           | 165 (31)              |              | 228 (30)           | 279 (26)              |
| Several RSHCs               | 393 (34)           | 85 (16)               |              | 190 (25)           | 165 (16)              |
| PWS                         |                    |                       | 0.06         |                    |                       |
| Both PW                     | 910 (78)           | 435 (82)              |              | 598 (80)           | 911 (86)              |
| $\geq 1$ PNW                | 257 (22)           | 96 (18)               |              | 152 (20)           | 150 (14)              |
| RSHCs/PWS                   |                    |                       | $<0.001$     |                    |                       |
| No RSHCs/both PW            | 348 (30)           | 229 (43)              |              | 284 (38)           | 548 (52)              |
| No RSHCs/ $\geq 1$ PNW      | 74 (6)             | 52 (10)               |              | 48 (6)             | 69 (7)                |
| One RSHC/both PW            | 276 (24)           | 135 (25)              |              | 174 (23)           | 241 (23)              |
| One RSHC/ $\geq 1$ PNW      | 76 (7)             | 30 (6)                |              | 54 (7)             | 38 (4)                |
| Several RSHCs/both PW       | 286 (25)           | 71 (14)               |              | 140 (19)           | 122 (12)              |
| Several RSHCs/ $\geq 1$ PNW | 107 (9)            | 14 (3)                |              | 50 (7)             | 43 (4)                |

\* Pearson’s chi-square test. Both PW = both parents working.  $\geq 1$  PNW = having at least one parent not working.

### Logistic Regression

In the first model, controlling for grade and ethnicity, all composite groups except for one RSHC/ $\geq 1$  PNW showed significantly elevated ORs for poor mental health in comparison with the reference group no RSHC/both PW. Among girls, the association with poor mental health gradually increased with increasing experiences with RSHCs/PNW, with the strongest association observed for poor mental health and the adolescents having several RSHCs/ $\geq 1$  PNW, with an OR of 5.05 (95% CI 2.82–9.04) compared with the reference group (Table 3). Correspondingly, the OR for poor mental health when reporting several RSHCs/both PW was 2.61 (95% CI 1.91–3.56). The ORs for poor mental health and experiences with RSHCs/ $\geq 1$ PNW did not increase with a similar magnitude among boys as among girls (Table 3). The model explained 6% of the variance among girls and 4% of the variance among boys. The likelihood ratio chi-square test results were 76 and 51, respectively.

In the second model, controlling for additional socioeconomic factors (no economic stress and living with both parents), the ORs for poor mental health among adolescents reporting experiences with RSHCs/ $\geq 1$  PNW were attenuated (Table 3). Among girls, both groups reporting several RSHCs, regardless of parental work status (both PW and  $\geq 1$  PNW), were significantly associated with poor mental health compared with the reference group (no RSHCs/both PW). Among boys, the groups with experiences of one RSHC were also associated with poor mental health, regardless of PWS. This was also observed for the group reporting several RSHCs in combination with both PW but not for those with  $\geq 1$  PNW. The second model explained 11% of the variance among girls and 8%



of the variance among boys. The likelihood ratio chi-square test values were 137 and 113, respectively.

**Table 3.** Logistic regressions of the composite variable of different experiences with relatives with severe health conditions and parental work status (RSHCs/PWS) in relation to adolescents' poor mental health by gender and shown as odds ratios (ORs) with 95% confidence interval (CI) (n = 3509).

| Poor Mental Health             |                      |                     |                      |                     |                      |                     |
|--------------------------------|----------------------|---------------------|----------------------|---------------------|----------------------|---------------------|
| RSHCs/PWS                      | Model 1 *            |                     | Model 2 #            |                     | Model 3 §            |                     |
|                                | Girls<br>OR (95% CI) | Boys<br>OR (95% CI) | Girls<br>OR (95% CI) | Boys<br>OR (95% CI) | Girls<br>OR (95% CI) | Boys<br>OR (95% CI) |
| No RSHCs/both PW               | 1                    | 1                   | 1                    | 1                   | 1                    | 1                   |
| No RSHCs/ $\geq 1$ PNW         | 1.01 (0.67–1.52)     | 1.39 (0.90–2.01)    | 0.74 (0.48–1.31)     | 1.07 (0.70–1.63)    | 0.65 (0.41–1.05)     | 0.83 (0.52–1.33)    |
| One RSHC/both PW               | 1.33 (1.02–1.73)     | 1.40 (1.10–1.78)    | 1.24 (0.95–1.63)     | 1.40 (1.10–1.79)    | 1.10 (0.82–1.47)     | 1.49 (1.45–1.93)    |
| One RSHC/ $\geq 1$ PNW         | 1.69 (1.07–2.70)     | 2.74 (1.77–4.26)    | 1.20 (0.75–1.93)     | 2.03 (1.29–3.22)    | 1.01 (0.60–1.70)     | 1.92 (1.17–3.16)    |
| Several RSHCs/<br>both PW      | 2.61 (1.91–3.56)     | 2.23 (1.68–2.95)    | 2.21 (1.63–3.04)     | 2.06 (1.54–2.74)    | 1.71 (1.21–2.40)     | 1.70 (1.24–2.33)    |
| Several RSHCs/<br>$\geq 1$ PNW | 5.05 (2.82–9.04)     | 2.26 (1.46–3.49)    | 3.22 (1.77–5.88)     | 1.42 (0.89–2.26)    | 2.02 (1.05–3.88)     | 0.93 (0.55–1.58)    |

Both PW = both parents working.  $\geq 1$  PNW = having at least one parent not working. \* Controlled for grade and ethnicity. # Controlled for grade, ethnicity, no economic stress, and living with both parents. § Controlled for grade, ethnicity, no economic stress, living with both parents, enjoying school, feeling safe at home, feeling happy about leisure, having dinner every day, and getting good sleep.

In the third model, protective factors of poor mental health (enjoying school, feeling safe at home, feeling happy with leisure, having dinner every day, and getting good sleep) were added, resulting in further reductions in the ORs when analyzing the association between poor mental health and RSHCs/PWS (Table 3). The same pattern as in Model 2 was observed for girls and boys; however, with no association was observed between boys' poor mental health and several RSHCs/ $\geq 1$  PNW compared with the reference group. The third model explained 30% of the variance among girls and 25% of the variance among boys. The likelihood ratio chi-square test values were 413 and 374, respectively.

#### 4. Discussion

This population-based study shows that adolescents reporting experiences with relatives with severe health conditions (RSHCs), in combination with parental work status (PWS), had significantly increased odds of self-reported poor mental health compared with peers with no such experiences. The found associations between poor mental health and the increasing burden of RSHC experience, were increased by having  $\geq 1$  PNW, for both girls and boys, with slight differences between genders. We also found that protective factors for mental health influenced the associations between experiences with RSHCs/PWS and poor mental health in this vulnerable group of adolescents.

This study shows that adolescents reporting experiences with RSHCs are in a more vulnerable life situation, including an increased odds of poor mental health, in line with the findings of previous studies [8,10,13,18,19,23]. The present results further point at an even more vulnerable situation for self-reported poor mental health among adolescents having experiences with RSHCs in combination with  $\geq 1$  PNW. Our novel results contribute to the understanding of adolescent psychosocial vulnerability for those having experiences with RSHCs and varying PWS, also considering the adolescents' perceived economic stress. The present approach, exploring the associations between psychosocial risk factors, combining adolescents' experiences with RSHCs and PWS in relation to self-reported poor mental health, has not been applied before to the best of our knowledge. By searching the literature, no comparable studies of psychosocial burden on adolescents' mental health were found.

Our found associations between all groups of adolescents reporting experiences with RSHCs with varying PWS were statistically significant with adjustments for grade and

ethnic background but slightly differed between genders with further adjustments. For girls, the associations remained significant when reporting several RSHC experiences, regardless of parental work status. For boys, the associations remained significant for those reporting one RSHC experience, regardless of PWS, as well as several RSHCs and both parents being employed.

In the present study, one group of adolescents showing no significant increase in OR for poor mental health were those reporting no RSCH/ $\geq 1$  PNW in comparison with the reference group with those reporting no RSHC/both PW. This finding indicates that adolescents that do not have experiences with RSCHs are not at increased risk of poor mental health irrespective of parental work status. Our finding is important given the previously described mediating pathways between low SES and increased risk of child and adolescent psychopathology through a number of mediating pathways [3]. These include a lack of access to resources that support cognitive, social, emotional, and physical development; increased exposure to trauma and violence; cumulative exposure to stressors; and differences in family processes and functioning [35–38]. Some of these pathways (e.g., variation in cognitive stimulation) may play a role in the association of SES with psychopathology across the entire SES distribution [39]. Others pointed at the financial hardship that is concentrated among families at the lowest end of the SES distribution [40]. Noble et al. investigated the relationships between SES factors and brain morphometry among children and adolescents, independent of genetic ancestry, and showed that family income mediated changes in brain surface area related to certain neurocognitive abilities, which was strongest among disadvantaged children [40]. Our results support that experiences with RSHCs play an important role in the pathway between SES and psychosocial health outcome in adolescents [16], likely mediated by parenting patterns related to psychiatric disorder/impairment or substance abuse/gambling disorders.

The adolescents in our study reporting combinations of any RSHC experiences with  $\geq 1$  PNW were at increased odds of poor mental health compared with peers without these experiences. Children and adolescents from low-SES families often have less access to many forms of resources, such as good or stable housing, education, leisure activities, well-balanced meals, and healthcare, which are all important for healthy development [1,4,31,35,41]. Adolescents' parents, when they have severe health conditions, such as psychiatric disorders and/or substance use disorders, often have a lower educational level; in addition to these hardships, one-third of these adolescents do not achieve complete grades when ending year 9 in compulsory school in Sweden [21]. Additionally, a young person having experience with a parent that died during childhood is more likely to receive social benefits than peers without this experience [9].

Our contribution to the understanding that protective factors of mental health reduce poor mental health among adolescents having experiences with RSHCs with or without PNW highlights the importance of early detection of this vulnerable group to prevent a less favorable development of one's own identity during the sensitive adolescence period. The Adolescent Psychosocial Assessment Methods (HEEADSSS) are useful for talking to young people in a trustful way [42] and are recommended to professionals engaging with adolescents that may have experiences with RSHCs within the healthcare, social services, or student healthcare settings. Children and adolescents having RSHCs should be offered adequate support by the professionals around the patient, regardless of the patient age, as stated by Swedish law [43].

To prevent the trajectory that psychosocial disadvantages during early life entails, other approaches are required. A highly relevant arena in this field is child health services (CHSs) [44]. In Sörmland county, as in other parts of Sweden, an evidence-based method, Safe Environment for Every Kid (SEEK), which is based on the understanding of the social determinants of health, is being implemented by CHS with the aim of better detecting psychosocial risk factors among young children and supporting mental health development. The SEEK screening instrument, including 18 questions about child safety, economic or parental stress, intimate partner violence (IPV), parental depressive symptoms, and parental



alcohol consumption, is distributed to one or both parents at six different CHS visits during the child's first four years of life [44]. After answering the questions, the CHS nurse discusses the responses with the parents. Used in the CHS context, many parents disclose child safety issues, worries related to economic situation, depressive symptoms, IPV, or alcohol misuse, with the same proportions of willingness to disclose in a safe environment noted for mothers and fathers [45]. The method provides opportunities for early psychosocial parental support that would otherwise have been missed, in line with the plan of action related to the goals of no poverty, good health, and reduced inequalities stated in the 2030 Agenda for Sustainable Development [6]. Our here presented results support the efforts of implementing strategies for early in life detection of psychosocial risk factors, especially ill-health among close relatives, to prevent future mental health problems in the child or adolescent itself. Future research, following mental health development in children and adolescents when better detecting psychosocial risk factors early in life are warranted.

### *Strengths and Limitations*

The Life and Health in Youth Survey 2020 was conducted at the time of the outbreak of the COVID-19 pandemic, leading to lower response rates, in comparison with the survey from 2017 (Y9 84%, Y2U 82%). Due to the pandemic, several upper-secondary schools were closed, and many adolescents in Y9 were not present at school. However, no systematic pattern in nonresponse was found; therefore, we may assume that the data are reliable.

Half of our study population stated that they had experiences with RSHCs, which is in agreement with the findings of a previous Swedish study [46]. Our definition of RSCHs lacks information on the type of relationship between the adolescent and the RSHCs. For example, we do not know whether the relationship is to a relative that is next of kin or to a friend, although the respective pathological effects of these relationships are not known. Regarding our measure of SES, the adolescents in the present study reported having at least one unemployed parent ( $\geq 1$  PNW, 20%) to a larger extent than found in official population-based data in Sörmland (unemployment among adults 9%, relative child poverty 14%).

A majority of the adolescents reported that they had poor mental health, in line with other national Swedish health data [26]. Our measure of poor mental health captured a broad range of symptoms and reporting such symptoms for at least two consecutive weeks is often used in the diagnosis of mental disorders [35]. To the best of our knowledge, this is the first study analyzing a composite variable with adolescents' experiences with RSCHs/PWS in relation to self-reported poor mental health.

The missing data for the questions regarding RSHC experiences (11%) and for PWS (5%) are a limitation in the study. These two questions may be perceived as sensitive, especially among adolescents with RSHC experiences. This may lead to nonresponse or recall bias among adolescents that otherwise would have contributed to these groups. When considering the background factors of the excluded adolescents, these adolescents may represent a vulnerable group due to not answering the questions on RSHCs (70%) or ethnicity (74%). The Life and Health in Youth Survey can only be answered in Swedish, which hinders participation for newcomer immigrants. Most of the excluded participants were boys. Economic stress was more common among excluded (19%) than included (14%) adolescents. Taken together, we assume that these drawbacks may have led to an underestimation of our noted associations. Another drawback is that we were not able to establish causal relationships between RSHCs/PWS and poor mental health with cross-sectional data. Thus, an association was found, and several factors protective against poor mental health were confirmed.

The major strengths of the data used for the present study are the population-based school design and a fairly equal gender distribution. Additionally, the study population, including over 3500 adolescents, allows for a generalization of the results to adolescents in

the county of Sörmland, and with some caution warranted if extending the results to other similar populations.

## 5. Conclusions

This population-based study adds to the knowledge that adolescents reporting experiences with RSHCs, in combination with PWS, have significantly higher odds of self-reported poor mental health than peers without such experiences. The found associations between poor mental health and the increased burden of RSHC experience were increased by having  $\geq 1$  PNW, which was observed for both genders. The protective factors for mental health influenced the associations between experiences with RSHCs/PWS and poor mental health in this vulnerable group of adolescents. Reporting  $\geq 1$  PNW was not associated with poor mental health if not having experiences with RSHCs. The present study provides further knowledge of the complex relationships between psychosocial risk factors and mental illness among young people. This knowledge is important for understanding when developing new methods to work with psychosocial risk factors in children and adolescents as well as in the individual case.

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**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of the Regional Ethical Review Board, Stockholm (protocol code Dnr 2017/709-32 and date of approval 7 April 2017).

**Informed Consent Statement:** Students and parents were informed beforehand in writing that participation was voluntary. According to the beforehand-given information, a completed questionnaire was regarded as the student's informed consent to participate. No parental approval is needed for participation above the age of 15 in Sweden.

**Data Availability Statement:** The dataset generated and analyzed in the current study is available from the authors upon request but is not publicly available due to ethical guidelines.

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