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The Association between Adolescents' Experiences of Close Relatives Having Severe Health Conditions and Their Own Mental Health—A Population-Based School Study

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Abstract: Adolescents with close relatives having severe health conditions or who have died (RSHC) are vulnerable, and this has long-term influences on their lives and health. This study investigated how adolescents with RSHC experiences reported having poor mental health and protective factors and the combined influence of these compared to their peers who had not had these experiences. A cross-sectional school-based survey among students aged 15–18 years (N = 3410) in Sörmland, Sweden, was used to analyse the association between poor mental health and experiences from having one or several RSHC experiences with physical illness, mental illness, or substance abuse/gambling disorder, as well as having relatives who have died. Logistic regression models were performed, adjusting for background factors, and protective factors against poor mental health related to school, home relations, safety in everyday life, and lifestyle were assessed. Adolescents with one RSHC experience had an OR of 1.45 (95% CI: 1.23–1.72) for poor mental health, and those with several RSHC experiences had an OR of 2.35 (95% CI: 1.94–2.84) compared to those with no RSHC experiences. The greatest OR for poor mental health was seen among adolescents with the combination of several RSHC experiences and few protective factors against poor mental health (18.83; 95% CI: 11.86–29.91). Adolescents with RSHC experiences have increased odds of poor mental health compared to adolescents without these experiences, especially those with several RSHC experiences and few protective factors. When meeting adolescents with RSHC experiences, supporting their key protective factors may play an important role in improving mental health.

Keywords: health promotion; mental health; protective factors; population-based study

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1. Introduction

Children and adolescents with a close relative that has severe health conditions (RSHC), such as somatic, mental, or addictive disorders, or that has died, are in a vulnerable life situation, with poorer well-being and worse life outcomes as compared to those without RSHC challenges [1–4]. Together, they constitute a large group of our young people. Approximately 10% of young people have a parent with a medical condition [5], and up to 20% have a parent with a mental illness [6,7]. In addition, 7–17% have a sibling with a chronic physical/mental condition [8]. In a Swedish school-based study, 10% of adolescents reported having parents with alcohol (9%) and/or other drug (3%) problems at some point during childhood [9].

Adolescents experiencing RSHCs may take on a lot of responsibilities at home, including providing care to the person with the disorder and getting into a strained situation at school, which causes stress in everyday life [10]. As a consequence, affected adolescents may not be able to participate in meaningful leisure activities or favourably develop socially or academically [11]. Evidence has shown that young people experiencing either somatic symptoms and/or internalising problems, such as depressive and anxiety symptoms, are

associated with the presence of illness in their parents or siblings [2,5]. There is also an association between being a close relative of a person with a psychiatric disorder and increased risk for mental illness [2,12], the development of a psychiatric disorder [1,12], and the development of substance abuse [3,13].

Poor mental health in adolescence impairs natural development and contributes to youth morbidity and mortality worldwide [14,15]. Sweden has a high number of youth reporting poor mental health status [15]. Worldwide, the high prevalence of poor adolescent mental health and depression is seen as a major area for health promotion [16]. The fact that poor mental health is seen as an underlying factor in an adolescent's health compromising behaviours [16] makes the study of improving adolescent mental health an important task.

Nevertheless, some children with ill parents may adapt to their distressing life conditions and experience increased maturity and strengthened family relations [3,4]. Research has shown that the presence of positive childhood experiences may help alleviate the consequences of adverse childhood experiences on health outcomes later in life [17,18]. Thus, studies investigating protective factors against poor mental health in adolescents with RSHC experiences are warranted [3]. Previous studies have found that important protective factors against poor mental health among adolescents with parents having somatic health conditions [4,11], alcohol and drug abuse disorders [3,11], or mental illness [6,19] include, for example, positive friend relations, positive parental relationships, positive school experiences, belief in the future, and meaningful leisure activities. Protective factors against poor mental health may be more important for adolescents with RSHC experiences since they are in a particularly vulnerable situation in life.

Previous research on mental health outcomes in adolescents with RSHC experiences has focused on one diagnostic group at a time. In the present study, which took a broader public health approach, we included four groups of RSHCs: physical illness, mental illness, substance abuse/gambling disorder, and having died. With this approach, we investigated the impact of an accumulation of one or several RSHC experiences on adolescent poor mental health. Furthermore, the impact of protective factors preventing poor mental health among adolescents with one or several RSCH was assessed. Our hypothesis was that having RSHC experiences was associated with poor mental health in adolescence and that protective factors related to an adolescent's situation at school, their situation at home, their safety in everyday life, and their lifestyle may influence this association in a protective way.

Thus, the aims of this explorative study were (1) to investigate the association between adolescents' reported experiences of having one or several RSHC and poor mental health; (2) to investigate potential protective factors against poor mental health in this group of adolescents; and (3) to explore if these protective factors influenced the possible association between adolescent poor mental health and RSHC experiences as compared to peers without these experiences.

2. Materials and Methods

2.1. Study Design and Setting

A cross-sectional study design was used with data from a tri-annual, population-based school survey, Life and Health in Youth, conducted by the Department of Welfare and Public Health in collaboration with the Centre for Clinical Research at the County Council of Sörmland, Sweden. According to Statistics Sweden, the county of Sörmland had a total population of 299,401 in 2020. The percentage of adolescents aged 15–18 years was approximately the same throughout Sweden as a whole (5%). The questionnaire was distributed to adolescents attending the 9th grade (Y9) (15–16 years old) and the second year of upper secondary school (Y2U) (17–18 years old), with the latter being attended by 93% of all 17–18-year-olds in Sweden.

2.2. Data Collection

During February–March 2020, adolescents answered a web-based questionnaire anonymously in classrooms during school hours with school personnel present. Both adolescents

and parents were informed in writing beforehand that participation was voluntary, and the adolescents received this information again before they started to fill out the questionnaire. Hence, a completed questionnaire was regarded as informed consent. According to Swedish law [20], no parental approval is needed for participants 15 years of age and older. The study design was approved by the Regional Ethical Review Board, Stockholm (Dnr 2017/709-32).

2.3. Study Population and the Questionnaire

In total, 4159 adolescents filled out the questionnaire. The response rates were 74% for Y9 and 50% for Y2U. The survey was performed during the COVID-19 pandemic outbreak. Thus, some adolescents were absent from school, and several upper secondary schools were closed, leading to lower response rates compared to the previous questionnaire from 2017 (84% and 82%, respectively). Nevertheless, we found no systematic pattern in the non-responses; therefore, we assumed that the data were reliable. The questionnaire was used to describe public health in adolescents and included 77 questions for Y9 and 85 questions for Y2U regarding various aspects of the adolescents' lives, health, and living conditions [21]. The Life and Health in Youth surveys have been used in previous research regarding adolescent health [22–24].

2.4. Measurements and Definitions

The Swedish Health Care Law and the Convention on the Rights of the Child state that a child has the right to receive information, advice, and support when a close relative has a severe health condition, such as a physical illness, a mental illness, or a substance abuse/gambling disorder, or has died. The county of Sörmland has a broader definition of children as close relatives in comparison to the expression next of kin (assuming a biological relationship). In clinical practise, this means that a child and their parents will decide who is considered a close person with a severe illness/impairment or who has died. In the present study, the definition of close relative was as described below.

The questionnaire had four questions on RSHC experiences, which also served as our measure of exposure. These were as follows: "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". The questions were used to represent adolescents with different RSHC experiences. The first group represented adolescents with the experience of belonging to one of the above RSHC experience groups, hereinafter referred to as "one RSHC", and the second group consisted of adolescents with the experience of belonging to two to four of the RSHC groups above, hereinafter referred to as "several RSHC". Adolescents without these experiences comprised the control group. In total, 3697 (89%) adolescents answered the question about having RSHC experiences. Of these, 287 adolescents were excluded listwise due to providing incomplete data, whereof 84 adolescents had missing data about gender. This was followed by missing information about physical abuse by an adult (120 adolescents), ethnicity (37 adolescents), being happy with life (30 adolescents), and enjoying school (16 adolescents). An analysis of the excluded adolescents showed that half of them were boys, with similar proportions for the two grades as were found among those included. A smaller proportion than the included group reported experiencing no economic stress (67% vs. 84%, respectively).

Our outcome, having poor mental health, was measured by the question "During the last 12 months, have you been feeling down?". It had the following exemplifying text: "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 experience of having these symptoms for at least two weeks in a row is often used in diagnosing mental disorders [25]. Those answering "yes" were classified as having poor mental health, and those answering "no" were classified as not having poor mental health.

Several background factors were included. Gender was categorised as "boy" or "girl". Grades were categorised as Y9 (15–16 years old) and Y2U (17–18 years old). Ethnicity was categorised 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). A proxy for no economic stress was used by the question "Are you worried about your family's economy?", and answers were categorised into "yes" ("yes, quite worried" or "yes, very worried") or "no" ("not especially worried" or "not worried at all").

Several potential protective factors against poor mental health, reflecting lifestyle and everyday life among adolescents, were available in the questionnaire. Based on previous literature, the following factors were selected by the research team and included for use in the present study: The answers were categorised and, if needed, recoded to reflect a protective role according to the description below:

School-related factors: Truancy was measured by the question "Do you usually skip going to school or to class/es?" and dichotomised into "yes" ("yes, a few times during the semester"; "yes, once a month"; "yes, 2–3 times a month"; "yes, once a week"; and "yes, several times a week") or "no". To measure academic achievements, the question "Do you have a failing grade, or do you lack grades in any subject?" was used and dichotomised into "yes" ("yes, in 1–2 subjects"; "yes, in 3–4 subjects; and "yes, in 5 subjects or more") or "no". Enjoying school was measured by the question, "Do you like school?" and dichotomised into "yes" ("very much" and "much") and "no" ("neither/nor", "not that much", and "not at all"). Being bullied at school during the last 6 months was dichotomised into "yes" ("yes, a few times"; "yes, a few times a month"; "yes, a few times a week"; and "yes, basically every day") or "no". In addition to "enjoying school", the other questions and their answers were recoded to correspond to the following protective factors: "not being truant", "having complete grades", and "not being bullied at school".

Home-related factors: Feeling safe at home was measured by the question "Do you feel safe at home?", and answers were dichotomised into "yes" ("yes, always") and "no" ("yes, often" and "no, seldom or never"). Living with both parents was measured by the question "Whom do you live with?", and answers were dichotomised as "yes" ("living with both of my parents who live together") and "no" ("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 another caregiver", or "I live alone"). Trust in parents was measured using the statement "I can always trust any of my parents/caregivers in important matters", and the answers were dichotomised as "yes" ("yes") or "no" ("neither yes nor no" and "no"). Based on these answers, the following protective home-related factors were obtained: "feeling safe at home", "living with both parents", and "having trust in parent(s) in important matters".

Safety in everyday life: Questions on safety, such as different types of abuse and feelings about safety in life in general, were used. Online abuse was measured by the question "Have you been exposed to any harassment or violations on social media, such as Snapchat, Instagram, or Facebook, during the last 12 months?", with answers dichotomised into "yes" ("yes, once"; "yes, several times"; and "yes, about once a week") or "no" ("no" and "I have never used social media"). Sexual abuse was measured by the question "Have you been touched or forced to touch someone else in a sexual way?", with answers dichotomised as "yes" ("yes, once"; "yes, a few times"; or "yes, many times") or "no". Physical abuse by an adult was measured by the question "Have you been slapped or hit by an adult?", and the answers were dichotomised as "yes" ("yes, once" or "yes, several times") or "no". Safety also included measures of the protective factors "feeling happy about life" and "being pleased with leisure". The corresponding questions were as follows: (1) "How do you like your life right now?", with answers dichotomised into "yes" ("I am very happy" or "I am quite happy") and "no" (I am not that happy" and "I am unhappy"); and (2) "How do you like your leisure time?", with answers dichotomised into "yes" ("I am very happy" or "I am quite happy") and "no" ("I am neither happy nor unhappy", I am not that happy", and "I am unhappy"). Based on these variables, of which some were recoded,

the following protective factors were created: "not being violated via social media", "not being sexually abused", "not being physically abused by an adult", "feeling happy about life", and "being happy with leisure time".

Lifestyle factors: Several lifestyle factors were also included and, if required, recoded to represent protective factors such as "a good meal plan every day", "good sleep", and "no health-compromising behaviours". Having a good meal plan was measured with the question "How often do you eat the following meals?", and the subsequent questions "Breakfast", "Lunch", or "Dinner". Reporting having each of the respective meals every day was dichotomised as "yes" ("every day") and "no" ("4–6 times a week", "1–3 times a week", or "never"). Sleep quality had two measures that were recoded into protective factors. The first was based on the question "During the past 3 months, how often have you had difficulties falling asleep", with the answers dichotomised as "falling asleep well" (having trouble falling asleep "seldom" or "never") or "not falling asleep well" (having trouble falling asleep "once a month, "once a week", "more than once a week", and "almost every day"). The second was "During the past 3 months, how often have you had restless sleep", and the answers were dichotomised and coded into "good sleep" ("seldom" or "never") or "poor sleep" (having trouble falling asleep "once a month, "once a week", "more than once a week", and "almost every day").

Use of alcohol was measured by the question "Have you consumed alcohol during the last 12 months?", and the answers were dichotomised into "yes" ("yes, one time" up to "yes, more than two times a week") or "no". For daily use of tobacco, questions on snuff use and cigarette use were combined, and answers were dichotomised into "daily use of cigarettes or snuff" and "no daily use" ("using tobacco seldom" or "never"). The question "Have you ever used drugs?" was dichotomised into "yes" ("yes, one time" and "yes, several times") or "no". Based on the recoding of these variables, the following protective factors were created: having "breakfast daily", "lunch daily", "dinner daily", "good sleep", "falling asleep well", "no use of alcohol", "no daily use of cigarettes or snuff", and "never tried illegal drugs".

2.5. Data Analysis and Sample Size Estimation

A chi-square test was used to explore differences in demographic and study variables between the three groups of adolescents having one RSHC experience, several RSHC experiences, and the control group with no such experiences (Table 1).

Table 1. Characteristics of the study population and their associations with the reported experiences of having one or several relatives with severe health conditions (RSHC).

	Comparison Group	**One RSHC**	**Several RSHCs**	**Chi-Square Statistics** [#]	***p*-Value** *
	n = 1599	**n = 1003**	**n = 808**		
	−47%	**−29%**	**−24%**		
	n (%)	**n (%)**	**n (%)**		
Total	1599 (47%)	1003 (29%)	808 (24%)		
Background factors					
Gender				55	0
Boy	918 (57)	493 (49)	338 (42)		
Girl	681 (43)	510 (51)	470 (58)		
Grade				0.86	0.62
Y9 (15–16 years old)	863 (54)	533 (53)	420 (52)		
Y2U (17–18 years old)	736 (46)	470 (47)	388 (48)		

Table 1. *Cont.*

	Comparison Group	One RSHC	Several RSHCs	Chi-Square Statistics #	*p*-Value *
	n = 1599	n = 1003	n = 808		
	−47%	−29%	−24%		
	n (%)	n (%)	n (%)		
Ethnicity				38	0
Swedish	1144 (72)	811 (81)	649 (80)		
Non-Swedish	455 (29)	192 (19)	159 (20)		
No economic stress				85	0
Yes	1439 (90)	876 (87)	617 (76)		
No	160 (10)	127 (13)	191 (24)		
Mental health					
Poor Mental Health				138	0
No	869 (54)	434 (43)	237 (29)		
Yes	730 (46)	569 (56)	571 (71)		
School-related factors					
Having complete grades				16	0
Yes	1180 (74)	756 (75)	545 (68)		
No	419 (26)	247 (24)	263 (33)		
Not being truant				33	0
Yes	1471 (92)	918 (92)	686 (85)		
No	128 (8)	85 (9)	122 (15)		
Not being bullied at school				40	0
Yes	1421 (89)	860 (86)	641 (80)		
No	178 (11)	143 (14)	167 (20)		
Enjoying school				44	0
Yes	1238 (77)	749 (75)	525 (65)		
No	361 (23)	254 (25)	283 (35)		
Home-related factors					
Feeling safe at home				91	0
Yes	1496 (94)	907 (90)	655 (81)		
No	103 (6)	96 (10)	153 (19)		
Living with both parents				57	0
Yes	1065 (67)	598 (60)	410 (51)		
No	534 (33)	405 (40)	398 (49)		
Having trust in parent/s in important matters				58	0
Yes	1458 (91)	879 (88)	649 (80)		
No	141 (9)	124 (12)	159 (20)		
Safety in everyday life					
Not being violated via social media				93	0
Yes	1342 (84)	793 (79)	540 (67)		
No	257 (16)	210 (21)	268 (33)		
Not being sexually abused				82	0
Yes	1380 (86)	789 (79)	574 (71)		
No	219 (14)	214 (21)	234 (29)		
Not being physically abused by an adult				50	0
Yes	1478 (92)	916 (91)	665 (82)		
No	121 (8)	87 (9)	143 (18)		

Table 1. *Cont.*

	Comparison Group	One RSHC	Several RSHCs	Chi-Square Statistics #	*p*-Value *
	n = 1599	n = 1003	n = 808		
	−47%	−29%	−24%		
	n (%)	n (%)	n (%)		
Feeling happy about life				63	0
Yes	1380 (86)	789 (79)	574 (71)		
No	219 (14)	214 (21)	234 (29)		
Feeling happy with leisure				65	0
Yes	1478 (80)	916 (76)	665 (65)		
No	84 (20)	69 (24)	105 (35)		
Lifestyle factors					
Having breakfast daily				34	0
Yes	861 (54)	478 (48)	336 (42)		
No	738 (46)	525 (52)	472 (58)		
Having lunch daily				78	0
Yes	1150 (72)	645 (64)	435 (54)		
No	449 (28)	358 (36)	373 (46)		
Having dinner daily				29	0
Yes	1360 (85)	853 (85)	621 (76)		
No	239 (15)	150 (15)	187 (23)		
Good sleep				103	0
Yes	1387 (87)	845 (84)	568 (70)		
No	212 (13)	158 (16)	240 (30)		
Falling asleep well				72	0
Yes	1164 (73)	712 (71)	455 (56)		
No	435 (27)	291 (29)	353 (44)		
No use of alcohol				66	0
Yes	776 (49)	400 (39)	255 (32)		
No	823 (52)	603 (60)	553 (69)		
No daily use of cigarettes or snuff				14	0
Yes	1449 (91)	894 (89)	692 (86)		
No	150 (9)	109 (11)	116 (14)		
Never tried illegal drugs				46	0
Yes	1481 (93)	908 (91)	678 (84)		
No	118 (7)	95 (10)	130 (16)		

* Chi-square test. # Value of Pearsons chi-square statistics.

Logistic regressions were used to examine the relationship between adolescents' self-reported poor mental health (the dependent variable) and the different groups of adolescents with RSHC experiences, i.e., none, one, or several RSHC experiences (the independent variables) (Table 2). For the continued investigation of the association between adolescents' poor mental health and RSHC experiences. Adjustments were made in six different models for background factors, home relations, lifestyle, school, and safety in everyday life, and they were also made in a fully adjusted model, with all adjustments described in Table 2. Model 6 in Table 2 shows the results with full adjustments for all the factors that remained statistically significant in preventing poor mental health. This model is also shown in detail in Supplementary Table S1. Odds ratios (ORs) were estimated in adjusted models with 95% confidence intervals (CI). *p*-values of <0.05 in the two-tailed analysis were considered statistically significant.

Table 2. Modelling of associations between adolescents' poor mental health and experiences with relatives with severe health conditions (RSHC) after adjustments.

	Model 1 Background Factors [1] OR (95% CI)	Model 2 School-Related Factors [2] OR (95% CI)	Model 3 Home-Related Factors [3] OR (95% CI)	Model 4 Safety in Everyday Life [4] OR (95% CI)	Model 5 Lifestyle Factors [5] OR (95% CI)	Model 6 Fully Adjusted [6] OR (95% CI)
No RSHC (Ref.)	1	1	1	1	1	1
One RSHC	1.45 (1.23–1.72)	1.44 (1.21–1.71)	1.38 (1.16–1.63)	1.39 (1.16–1.66)	1.38 (1.16–1.65)	1.30 (1.07–1.56)
Several RSHC	2.35 (1.94–2.84)	2.08 (1.70–2.53)	2.03 (1.67–2.46)	1.82 (1.47–2.24)	1.77 (1.45–2.18)	1.51 (1.22–1.88)

[1] adjusted for gender and no economic stress (ethnicity and grade were not significant). [2] adjusted for gender, no economic stress, having complete grades, not being truant, not being bullied at school, and enjoying school. [3] adjusted for gender, no economic stress, feeling safe at home, living with both parents, and having trust in parent(s) in important matters. [4] adjusted for gender, no economic stress; not being violated via social media; not being sexually abused; not being physically abused by an adult; feeling happy about life; and feeling happy with leisure. [5] adjusted for gender, no economic stress, having breakfast daily, having lunch daily, having dinner daily, good sleep, falling asleep well, no use of alcohol, no daily use of cigarettes or snuff, and never tried illegal drugs. [6] adjusted for gender, no economic stress, enjoying school, not being bullied during the last 6 months, feeling safe at home, living with both parents, not being abused online, being happy with life, being happy with leisure, not having consumed alcohol during the last 12 months, having dinner daily, getting good sleep, and falling asleep well (Nagelkerke 40%).

Next, the same significant protective factors against poor mental health that were found in model 6 (as shown in Table 2) were considered few (0–7) or several (8–11). Their distribution and association with the different experiences of none, one, or several RSHCs are described in Table 3. Finally, a summary index was created based on the consideration of the eleven protective factors as few (0–7) or several (8–11) and the different groups of RSHC experiences, i.e., none, one, or several RSHCs. The summary index was tested by logistic regression against self-reported poor mental health (Table 4). The statistical analyses were carried out using SPSS 22.0 for Windows (SPSS Inc., Chicago, IL, USA).

Table 3. Distribution and association between protective factors * among adolescents with and without relatives with severe health conditions (RSHC).

	No RSHC n (%)	One RSHC n (%)	Several RSHC n (%)	*p*-Value ^
Number of protective factors				0.00
Few (0–7)	370 (23)	292 (29)	398 (49)	
Several (8–11)	1229 (77)	711 (71)	410 (51)	

* enjoying school, not being bullied during the last 6 months, feeling safe at home, living with both parents, not being abused online, being happy with life, being happy with leisure, not having consumed alcohol during the last 12 months, having dinner daily, getting good sleep, and falling asleep well. ^ chi-square test.

The sample size was estimated according to a stratified Fisher's exact test and its sample size calculations. The population size of adolescents (15–19 years old) was 17,713 in the county of Sörmland in 2020 (according to Statistics Sweden). We set the confidence level to 95% and the z-score to 1.96 (confidence level), and we assumed that the standard deviation was 0.5. This provided an estimated sample size of 2191 adolescents. Our study included 3410 adolescents, making it possible to draw conclusions about the adolescent population in the County of Sörmland.

Table 4. Associations between adolescents' poor mental health and the summary index of having relatives with severe health conditions (RSHC) and the number of protective factors.

Summary Index	Poor Mental Health [1] OR (95% CI)
No RSHC and 8–11 protective factors (Reference)	1.0
One RSHC and 8–11 protective factors	1.45 (1.21–1.75)
Several RSHC and 8–11 protective factors	1.83 (1.47–2.28)
No RSHC and 0–7 protective factors	10.25 (7.02–14.95)
One RSHC and 0–7 protective factors	13.64 (8.44–22.04)
Several RSHC and 0–7 protective factors	18.83 (11.86–29.91)

[1] adjusted for sex and no economic stress.

3. Results

This study included 1661 girls and 1749 boys, of whom more than half reported one or several experiences with RSHC. The single largest group comprised those who had a close relative who had died (n = 1439), followed by those who had a close relative with a physical illness/impairment (n = 760), a mental illness or psychiatric disorder/impairment (n = 741), and a substance abuse/gambling disorder (n = 561).

Compared to adolescents who had experienced one or several RSHCs, the control group (n = 1599) consisted of somewhat larger proportions of boys and adolescents with no economic stress, while the number of youths of Swedish ethnicity was lower (Table 1). Most adolescents in the control group reported a good overall situation at school and at home, and they felt safe in everyday life with healthier behaviours.

3.1. Adolescents with Close Relatives Having Severe Health Conditions

In total, 29% of the included adolescents reported having experienced one RSHC, while 24% reported several RSHC experiences (Table 1). Adolescents who had experienced one RSHC consistently reported being in a vulnerable situation in school and at home in larger proportions, regarding safety and healthy behaviours, compared to the control group. Those with several RSHC experiences had the most vulnerable situations of the study participants (Table 1).

3.2. Poor Mental Health

Nearly half of the adolescents in the control group reported poor mental health, compared to six out of ten adolescents reporting experiences with one RSHC and seven out of ten among those having several RSHC experiences (Table 1).

In Table 2, associations between adolescents' poor mental health and having experienced one or several RSHC are shown. Compared to the control group, and with adjustments for sex and no economic stress, the ORs for poor mental health were 1.45 (95% CI: 1.23–1.72) for adolescents who had experienced one RSHC and 2.35 (95% CI: 1.94–2.84) for those who had several RSHC experiences (Table 2 model 1). The stepwise adjustment for the different protective factors in the subsequent models attenuated the ORs, particularly in the group that had several RSHC experiences (Table 2, models 3–5).

The fully adjusted model 6 (Table 2) shows the adjustments for sex, no economic stress, and the statistically significant protective factors against poor mental health: enjoying

school, not being bullied during the last 6 months, feeling safe at home, living with both parents, not being abused online, being happy with life, being happy with leisure, not having consumed alcohol during the last 12 months, having dinner daily, having good sleep, and not having difficulties falling asleep (Supplementary Table S1). In this model, the adjusted ORs for poor mental health were 1.30 (95% CI: 1.07–1.56) among adolescents with one RSHC experience and 1.51 (95% CI: 1.22–1.88) among those with several RSHC experiences compared to the control group. The value of the Nagelkerke R2 was 0.40, indicating that this model explained 40% of the variance.

3.3. Protective Factors against Poor Mental Health

Eleven factors were identified as having a significant preventive effect on poor mental health when having RSHC experiences. The strongest effects were found for feeling happy about life, having good sleep, and not being bullied at school. These were followed by feeling happy with leisure, enjoying school, no use of alcohol, having dinner daily, feeling safe at home, not being violated via social media, falling asleep well, and living with both parents. The results are shown in Supplementary Table S1.

The proportions of the protective factors against poor mental health varied in the study population (Table 3). Almost four out of five adolescents in the control group reported having several protective factors, while this was reported by half of the adolescents in the group with several RSHC experiences.

3.4. Summary Index for the Number of Protective Factors

Table 4 displays the summary index of protective factors and the burden of RSHC on the odds of adolescents' poor mental health. The adjusted ORs for poor mental health increased jointly a lower number of protective factors and a higher burden of RSHC. The adjusted ORs for poor mental health ranged from 1.45 (95% CI: 1.21–1.75) among those having one RSHC experience and several protective factors to 18.83 (95% CI: 11.86–29.91) among those having several RSHC experiences and few protective factors compared to the control group with no RSHC experiences and several protective factors.

4. Discussion

The present explorative study, with its public health perspective on the burden of experiences of RSHC among adolescents, showed significantly increased odds for poor mental health among adolescents who had experienced one or several RSHCs compared to peers that had not shared this experience. Adolescents with several RSHC experiences had the greatest odds of poor mental health. We also identified eleven statistically significant protective factors against poor mental health: feeling happy about life, having good sleep, not being bullied at school, feeling happy with leisure, enjoying school, no use of alcohol, having dinner daily, feeling safe at home, not being violated via social media, falling asleep well, and living with both parents. Adolescents with few (0–7) protective factors and several RSHC experiences had an 18-fold increased OR for self-reported poor mental health compared to their counterparts who had several (8–11) protective factors and no RSHC experiences, indicating that mental health protective factors are of importance in the vulnerable group of adolescents who had experience with RSHC.

Half of the present study population stated that they had experience with at least one RSHC, which was congruent with a previous study from Sweden [26], making this a large proportion of our young people. In addition, our finding that adolescents with RSHC experiences were in a vulnerable situation for poor mental health was in accordance with previous studies that have shown the long-term effects of RSHC experiences on adolescents' poor mental health [1,12].

To the best of our knowledge, the present approach to exploring the burden of several and different RSHC experiences has not been used in research before. The present study showed that adolescents with several RSHC experiences were in a particularly vulnerable situation, with an overall lower proportion of protective factors against poor mental health

(Table 1). As in previous research, we found that economic stress was more prevalent in adolescents who had several RSHC experiences [12].

Our results further showed that the odds of poor mental health when having RSHC experiences are greatest among those with few protective factors (Table 4), which was in line with a previous study [27]. It has been shown that children with an ill parent may experience increased maturity and strengthened family relations and appreciation [3,28]. Even though it is not fully understood why these resilient children adapt and thrive despite their RSHC experiences, protective factors likely play an important role [3,18,19].

The present study identified eleven statistically significant protective factors against poor mental health related to home, lifestyle, school, and safety in everyday life, which significantly attenuated the odds for poor mental health among adolescents with RSHC experiences (Table 2). Of these protective factors, feeling happy about life showed the strongest protective effect on poor mental health, followed by having good sleep and not being bullied at school (Supplementary Table S1). This new knowledge about a dose-response-like association between adolescents' burden of RSHC experiences in combination with having few protective factors in their lives and adolescent poor mental health is important to many stakeholders because it highlights the extent of supportive work that is needed to ensure the best conditions for adolescent development in this large and vulnerable group.

Our identified protective factors represented different aspects of adolescents' lives, indicating that a holistic, supportive approach should not only involve family and friends but also several stakeholders, such as healthcare professionals, student health teams, school personnel, and other organisations that meet with adolescents dealing with RSHCs. It has also been suggested that effective health promotion interventions for adolescents should be simultaneous at the government, community, and local levels [18], and they should focus on overall self-esteem and self-empowerment rather than on single health issues.

The observed increased odds for adolescents' poor mental health when coping with a higher burden of RSHC experiences underlines the importance of health care personnel in providing information and support to this vulnerable group, as has been pointed out in previous research [29,30]. A previous review concluded that children living with parents who have a life-limiting illness want to be involved in the health care situation, increasing their possibilities for managing the situation [29]. Another review concluded that mental health nurses play a key role in situations involving adolescents with parents who have mental disorders with respect to providing information and building resilience in affected adolescents [19]. Similarly, personnel in other organisations, such as social services, are important for providing support and enhancing resilience when meeting with adolescents experiencing close relatives with mental and/or addictive disorders. Previous research among children whose parents had mental illness concluded that interventions should focus on children's psychological and physical well-being as these domains are often impaired [3,6,12]. To improve health in this group, the focus should be on the whole family. The interventions may target parents' health and provide social support for the child or adolescent, as the effects have been found to be interrelated [6].

The present study found that feeling happy about life was the strongest protective factor against poor adolescent mental health when having RSHC experiences. Peer acceptance, as it relates to not being bullied and feeling happy with leisure, is of fundamental importance in normal psycho-social development, but it may be threatened for those living with RSHCs. Taking on many responsibilities at home and/or deviating from the norm may have a negative impact on an adolescent's development, as forming one's own identity is central to the transition from childhood to adulthood. For adolescents with RSHC experiences, peer support groups may be one option for promoting resilience, well-being, coping skills, and mutual support. Altogether, the most vulnerable group of youths—those with several RSHC experiences and fewer protective factors—is likely to have complex needs that also require compassionate and professional support based on interprofessional collaboration.

The County Council of Sörmland systematically works with the human rights of children in clinical healthcare and other functions. Approximately 300 employees act as children's rights advocates at their own workplaces. As part of these efforts, there is a constant development of guidelines, routines, and education for staff working with children's rights. A recommendation for future studies is to analyse the four different groups of RSHCs separately to investigate their possible different impacts on adolescents' poor mental health in order to achieve a better understanding of the specific needs of affected adolescents.

Strenghts and Limitations

One limitation of the study was the lack of data regarding RSHC experiences. Since having RSHC experiences may be perceived as a sensitive question, this may have led to non-responses, recall bias, or selection bias among the adolescents that would otherwise have contributed to this group's data. In this case, we assumed that our results were underestimated. Social desireability may also have influenced or resulted in over-reporting "good behaviour" or under-reporting "bad" or undesirable behaviours. Another drawback was the lack of information on the person(s) who were the adolescent's RSHC, and we were unable to distinguish between deaths due to organ failure and deaths due to severe illness. In addition, missing data on other covariates may also have led to the underestimation in our results. We were, however, able to differentiate between adolescents with one RSHC experience and those with several RSHC experiences. The question used for measuring adolescents' self-reported poor mental health was a general measurement, capturing a variety of symptoms related to poor mental health that had been present for at least two weeks in a row. The advantage was that we captured a variety of poor mental health indicators, and the drawbacks were a lack of specificity and not being able to say anything about possible underlying psychiatric diagnoses in the adolescents.

We also lack standardised measures of known validity and reliability. However, during the questionnaire's construction, its comprehensibility was tested face-to-face with groups of adolescents.

A strength of the study was its large sample size of 3410 adolescents and its population-based study design, which may allow for generalisation to Swedish adolescents and, with some caution, to other similar populations.

5. Conclusions

Adolescents with RSHC experiences are at an increased risk for poor mental health compared to peers without these experiences. Those who had several RSHC experiences showed the greatest odds of poor mental health. These adolescents are in a vulnerable situation as they generally have fewer protective factors protecting them against poor mental health. Enhancing these protective factors using a supportive, holistic approach that involves several stakeholders may increase the mental wellbeing of this vulnerable group of adolescents.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/adolescents3030039/s1. Table S1: The results of the fully adjusted model for poor mental health among adolescents with and without RSHC experiences, with the ORs of the protective factors, as seen in Table 2.

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Institutional Review Board Statement: The study was approved by the Regional Ethical Review Board, Stockholm (DNR 2017/709-32).

Informed Consent Statement: Students and parents were informed beforehand in writing that participation was voluntary. 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 analysed in the current study is available to the authors, but it is not publicly available due to ethical guidelines.

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