

The association between adolescent condom use and individual and environmental resilience protective factors

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Adolescent sexual risk taking, such as non-use of condoms,¹ can have short- and long-term negative impacts on adolescent wellbeing, including the spread of sexually transmissible infections (STIs)² and unintended pregnancies.³ International data suggests that while the proportion of adolescents who had ever had sexual intercourse has increased, condom use, considered by some to be the most effective method to lower STD risk,⁴ has decreased.⁵⁻⁷

An understanding of the protective factors that may influence condom use by sexually active adolescents is important to inform prevention efforts aimed at reducing such sexual risk taking. A limited number of studies have examined associations between protective factors and adolescent condom use. For example, associations have been found between condom use and individual factors including self-esteem (positive and negative associations),^{8,9} educational aspirations,¹⁰ goal setting,⁹ and decision making skills,⁹ and between condom use and environmental protective factors of parental support^{10,11} and extra-curricula involvement.¹⁰

Such factors are similarly considered to be protective factors of an adolescents' 'resilience',¹²⁻¹⁸ which is broadly described as a process, capacity or outcome of successfully adapting to challenging or threatening life circumstances.¹⁹⁻²¹ Previous studies investigating the associations between resilience protective factors and condom use

Abstract

Objective: Individual and environmental resilience protective factors are suggested to be associated with adolescent condom use; however, previous studies have not comprehensively examined such associations. This study aimed to determine the associations between condom use, and numerous individual and environmental resilience protective factors in sexually active Australian adolescents.

Methods: Participants were Grade 10 students attending 28 Australian government high schools (n=1,688). An online survey (2011) collected data regarding: sexual intercourse (past year), condom use and 14 individual and environmental resilience protective factors. Multivariable backward stepwise logistic regression models examined associations between student condom use and protective factors (total, subscale).

Results: Only total environmental protective factors remained in the final total score model; students with higher total environmental protective factors scores were 2.59 times more likely to always use a condom (95%CI: 1.80-3.74). Only three of 14 protective factor subscales were associated with a higher likelihood of always using a condom in the final subscale model (individual: goals/aspirations; environmental: community participation, pro-social peers).

Conclusions: Total environmental and three protective factor subscales demonstrated prominent associations with consistent use of condoms in sexually active adolescents.

Implications for public health: Consideration of particular resilience protective factors in adolescent sexual risk behaviour prevention, such as condom use, is warranted.

Key words: sexual risk taking, adolescents, protective factors, condom use, resilience

have not investigated a comprehensive range of individual and environmental factors, nor used a validated measure of resilience protective factors despite such measures having been developed,²² limiting the ability to determine which of such factors might be most important for condom use.

Given such limitations, an exploratory study was undertaken to examine the associations between one aspect of sexual risk taking, and

a broad range of individual and environmental resilience protective factors among sexually active Australian adolescents, using a comprehensive and validated measure.

Methods

Study design and setting

A cross-sectional survey, of Grade 10 students attending secondary schools in one local

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health district in New South Wales, Australia, was undertaken as part of the baseline evaluation of a larger intervention trial.²³ Ethics approval was provided by relevant committees and research approval bodies.²³

Procedure

All Grade 10 students (15–17-year-olds) attending schools participating in the larger intervention trial were eligible.²³ Parental consent was required for student participation. The students completed a confidential online survey during school time.

Measures

Condom use

Use of condoms was measured in three steps using questions from a national survey: 1) “have you ever had sexual intercourse?” (yes, no); if yes, 2) “have you had sexual intercourse in the last year?” (yes, no); and if yes, 3) “when you had sex in the last year, how often did you or your partner use condoms?” (always, sometimes, never).⁶

Protective factors

The California Healthy Kids Survey Resilience and Youth Development Module^{24,25} was used. This includes 51 items contributing to six individual and eight environmental protective factor subscales (Likert scale: ‘1=never true’, to ‘4=true all of the time’), see Table 1. The internal consistency and validity of the survey tool has been confirmed (Cronbach alpha coefficients for individual factor subscales: 0.55–0.81; environmental factor subscales: 0.71–0.91).

Student demographic information was also collected (Table 1).

Statistical analysis

Protective factor and condom use variables

Descriptive statistics described the prevalence of condom use. Mean scores and standard deviations were calculated for total individual and environmental protective factors scores, and for each of the 14 subscales. Subscale scores were derived by averaging all item scores pertaining to each subscale, and the scores for total individual and total environmental protective factors by calculating the average of relevant subscale scores. The correlation between all protective factor measures (six individual subscales, eight environmental subscales) was examined via calculation of Pearson correlation coefficients.

Associations between protective factor scores and condom use

Univariate associations between condom use (‘always’ or ‘sometimes’/‘never’) and student demographic characteristics and the 14 protective factors scores (total individual, total environmental, six individual and eight environmental subscales) were examined using chi square analysis. A logistic regression model was then developed to explore the association between condom use (dependent variable) and total individual and environmental protective factors

Table 1: Characteristics of participants who reported having sex in last 12 months (N=521).

Characteristics	Study sample	
	n	%
Gender		
Male	260	49.9
Age^a		
15	231	44.2
16	277	53.2
17 or older	8	1.5
Level of disadvantage^b		
1 Most disadvantaged	34	6.5
2	184	35.3
3	240	46.1
4	59	11.3
5 Least disadvantaged	4	0.8
School remoteness^b		
Major city	248	47.6
Inner regional	114	21.9
Outer regional/remote	159	30.5
Condom use		
Always	314	60.3
Sometimes	145	27.8
Never	62	11.9
	Mean	SD
Total individual resilience	2.93	0.49
Communication/cooperation	2.95	0.72
Self-efficacy	2.98	0.60
Empathy	2.96	0.75
Problem solving	2.69	0.75
Self-awareness	2.95	0.77
Goals and aspirations	3.03	0.75
Total environmental resilience	2.88	0.53
School support	2.74	0.82
School participation	2.18	0.76
Community support	3.15	0.83
Community participation ^c	2.84	0.92
Home support	3.17	0.70
Home participation	2.76	0.74
Peer caring relationships	2.72	0.65
Pro-social peers ^d	3.44	0.82

a: age missing for 5 students;

b: Student residential postcode was used to determine student remoteness³⁴ and socioeconomic status;³⁵

c: Example community participation subscale item: “I am part of a club, sports team, church group or am involved in another activity away from school”

d: Example pro-social peers subscale item: “My friends get into trouble a lot”, “My friends try to do what is right”

(independent variables). A second multiple variable logistic regression analysis explored the associations between all six individual and eight environmental protective factor subscales and condom use. A backwards elimination approach was utilized for both multiple variable models whereby any variable with a *p* value >0.05 was excluded. All final models controlled for significant socio-demographic variables and were adjusted for school clustering using Generalized Linear Mixed Models. Data were analysed with SAS Software Version 9.3.²⁶

Results

Sample characteristics

Across the 28 participating schools (74% school consent rate), parental consent was granted for 2,911 students (68.7%) and 1,688 students completed the student survey (participation rate: 39.8% of total enrolled students; 58.0% of students with parental consent).

A total of 561 (34.4%) students reported they had ever engaged in sexual intercourse and 521 students (31.9%) reported having had sex in the past 12 months (56 students did not answer any sex questions). Characteristics of students who reported having had sex in the past 12 months are described in Table 1.

Condom use

Sixty per cent of students who reported having sex in the past 12 months reported always using a condom, 28% reported use of a condom sometimes and 12% never used a condom (Table 1).

Protective factors

Mean scores and standard deviations for all protective factor scores are shown in Table 1 for students who reported having sex in the past year. Positive mainly medium to large correlations²⁷ were found between all individual and environmental protective factor subscales (0.20–0.61), see Supplementary File 1.

Associations between total individual and total environmental resilience protective factors and condom use

Significant univariate associations were found between both total protective factor scores and condom use, however only the total environmental remained in the final multiple variable model. Students with a higher total

environmental resilience factor score were more likely to report ‘always’ use condoms (OR: 2.59; 95%CI: 1.80, 3.74), see Table 2.

Associations between protective factor subscales and condom use

With the exception of ‘self-awareness’, significant univariate associations were found between all protective factor subscales and condom use; however, due to collinearity (see Supplementary file: Appendix A) the final multiple variable model contained three factor subscales (see Table 3). Students with higher scores for the individual protective factor ‘goals and aspirations’ (OR:1.37; 95%CI: 1.05,1.81), and the environmental protective factors of ‘community participation’ (OR: 1.34; 95%CI: 1.07,1.68) and ‘pro-social peers’ (OR: 1.62; 95%CI: 1.18,2.23) were more likely to ‘always’ use condoms.

Conclusions

This exploratory study contributes to the understanding of adolescent sexual risk-taking behaviour by examining the potential relationships between condom use and a comprehensive range of individual and environmental resilience protective factors. Students with higher scores for some protective factors were more likely to always use condoms, with total environmental protective factor score and three of 14 protective factors (‘goals and aspirations’, ‘community participation’, and ‘pro-social peers’) associated with condom use in final models. Such findings suggest that some protective factors of adolescent resilience may similarly be protective factors of condom use in sexually active adolescents. To the authors’ knowledge, this is the first study to examine the association between condom use and a broad range of individual and environmental resilience protective factors using a validated measurement tool. Such an examination is important to identify which resilience protective factors should be considered when developing intervention approaches aimed at reducing such risky sexual behaviour. No previous studies could be identified that examine associations between condom use and total individual or environmental resilience protective factor score. However, the finding that lower total environmental protective factors scores are associated with increased sexual risk-taking behaviour is consistent with research that has examined

Table 2: Association between condom use (‘always’) and total resilience protective factors and demographic factors.

Characteristics	OR	95 % Confidence Intervals		p
		Low	High	
Total environmental resilience	2.59	1.80	3.74	<0.0001
Gender				
Male	1.56	1.05	2.33	0.03
Female	1			

Note: ‘sometimes’/‘never’ is the reference category for OR’s
OR = Odds ratio, for resilience the OR was for a 1 unit change in resilience score.

associations between such total scores and other health risk behaviours, such as adolescent tobacco and cannabis use.²⁸ While comparisons with previous research regarding individual and environmental resilience protective factors is limited by variability in the definition of factors and adolescent subgroups studied, the direction of the results of the current study is similar to previous studies involving analogous measures. For example, previous studies have found similarly positive associations between condom use and educational goals and aspirations¹⁰ and extra-curricula community activities.¹⁰ When interpreting the findings of this study, consideration should be given to the study’s characteristics. A strength of this study was the use of a comprehensive and validated measure of resilience protective factors.^{24,25} In terms of limitations, sexual risk-taking behaviour was defined as consistency of condom use and, although an acknowledged important risk,^{10,29,30} other sexual risk-taking behaviours, such as multiple partners, were not assessed.³¹ Similarly, while sexual intercourse in the past year was assessed, different types of sexual intercourse were not assessed. Additionally, the survey relied on the self-report of adolescent condom use. While the study was limited by the reliance on adolescent self-report, strategies to increase the validity of adolescent report were used including a web-based survey and confidential participation by students.^{32,33} The collinearity found between resilience protective factors may have limited the number of resilience protective factors that remained prominent in the final model. Finally, the sample included only government schools from one region in Australia, which may limit the generalisability of the results.

Table 3: Association between condom use (‘always’) and individual and environmental resilience protective factor subscales and demographic factors.

Characteristics	OR	95 % Confidence Intervals		p value
		Low	High	
Individual subscales				
Goals and aspirations	1.37	1.05	1.81	0.02
Environmental subscales				
Community participation	1.34	1.07	1.68	0.01
Pro-social peers	1.62	1.18	2.23	0.003
Gender				
Male	1.82	1.19	2.78	0.008
Female	1			

Note: ‘sometimes’/‘never’ is reference group for OR’s.
OR = Odds ratios, for resilience the OR was for a 1 unit change in resilience score.

Despite these limitations, the findings suggest some individual and environmental resilience protective factors are associated with consistent use of condoms in sexually active adolescents. Such findings suggest particular resilience protective factors are credible intervention targets for the prevention of adolescent sexual risk behaviours, and as a result should be considered by governments, policy makers and research practitioners responsible for implementing prevention interventions in schools and other settings that aim to prevent adolescent sexual risk behaviours.

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Ethics approval

Approval to conduct the study was granted by the Hunter New England Health Human Research Ethics Committee (Ref:09/11/18/4.01), the University of Newcastle Human Research Ethics Committee (Ref:H-2010-0029), the Aboriginal Health and Medical Research Council (Ref: 776/11) and the New South Wales Department of Education and Training State Education Research Approval Process (Ref no. 2008118).

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Supporting Information

Additional supporting information may be found in the online version of this article:

Supplementary File 1: Correlation between individual and environmental resilience protective factor subscales.