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ORIGINAL RESEARCH

# Resilience In Nepalese Adolescents: Socio-Demographic Factors Associated With Low Resilience



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**Background:** Resilience can be viewed as the potential to deal with stress positively. Resilient adolescents are likely to enter adulthood with a greater capacity to cope well in difficult circumstances. The purpose of this study was to measure resilience and the socio-demographic characteristics of Nepalese adolescents with low resilience.

**Methods:** A cross-sectional study of 4 randomly selected secondary schools in Lalitpur, Nepal, was conducted with 416 adolescent students (54.8% girls; M=16.1 years, SD=1.5). Resilience was measured using the Adolescent Resilience Questionnaire (ARQ) in Nepali. Socio-demographic factors investigated included personal (e.g. gender, age, ethnicity, religion, birth order, and participation in exercise), family (e.g. type of family, parents' relationship status, employment and literacy) and community factors (e.g. living in an urban area).

**Results:** Mean resilience score was 311.7 (95% CI 308.6–314.5; SD=32.1) with 17.5% of adolescents classified as having low resilience. Socio-demographic factors associated with having low resilience included female gender (OR=1.73, 95% CI=1.03–2.95), attending a private school (OR=1.77, 95% CI=1.06–2.98), higher birth order compared to first born (OR=4.79, 95% CI=2.46–9.32), living in an urban area (OR=2.18, 95% CI=1.28–3.71); and being physically inactive (OR=3.0, 95% CI=1.77–5.08).

**Conclusion:** This first investigation of resilience in Nepalese adolescents using a standardised measure of resilience identified a number of socio-demographic factors as being associated with low resilience. While most socio-demographic factors are not modifiable, they can be used to guide educators and health professionals working with adolescents to identify those who may need greater support to achieve positive outcomes in the often challenging transition through adolescence and into adulthood.

**Keywords:** adolescents, resilience, low resilience, socio-demographic factors

## Introduction

Resilience is referred to as a continuous process of adapting and/or succeeding despite exposure to adversity.[1] The adversity, while defining resilience, encompasses through characteristics such as an experience of war, poverty, disadvantaged groups and one's or caregiver's illness.[2–5] Moreover, it borders undesirable life situations that are linked with adaptation difficulties.[6] In this study, resilience is conceptualised as a dynamic process across contexts and time. For this study, resilience is measured at a particular point in time to explore the resources or vulnerabilities for adolescents in the contexts of self, family, friends, school and community. Resilient people are better able to navigate stress or adversity and have

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a greater capacity to recover from or cope with distressing experiences.[7,8] Most adolescents will experience stress, adversity and/or trauma at some stage and therefore supporting resilience in adolescents is vital step in the development of resilient adults and positive outcomes across the life course.

Adolescence is transition phase between childhood and adulthood. Adolescence can be a vulnerable time in terms of health-risk behaviors, with potential impacts on adolescents' health and well-being into adulthood.[9] As per WHO, adolescents include individuals in the 10–19 years age group. Adolescence is the stage when an individual begins to develop independence, self-identity, and their peer group becomes increasingly important.[10] Stress during this time can arise from various sources including the school environment; relationships with friends, striving for greater independence; physiological changes; worry about academic achievement or choosing a career; family problems; neighborhood conditions; and more. Resilience becomes increasingly important in this time of significant change and stress, with the increasing roles and responsibilities, potentially combined with challenging contexts such as poverty, illness, family break up, impacting on outcomes in young adulthood.[11] Classic studies on resilience described resilient child as invulnerable or invincible.[5,12]

Resilience is a dynamic process of interaction between risk and protective factors.[9,13,14] Risk factors are stressful events such as low economic status, broken family, disaster, health problem, violence or other conditions that enhance the probability of happening or continuation of a problem.[13] Protective factors include characteristics such as determination, self-efficacy, creativity, self-awareness or conditions encircling family/parents support, good interpersonal relationship, school support, community support or contexts that help one to successfully combat or stabilize exposure to a risk.[13–21] The overall health status of an adolescent will be determined both by their behavior and by the environment in which they live. Adolescent resilience involves both risk and protective factors in their "individual nature, family, neighborhood support, and community and society resources".[22] However, a greater burden of risky behaviors and lack of protective factors in the living environment of young people has been identified.[23] Resilience has been linked to less psychopathology in adolescence, while a lack of resilience has been linked to internalizing problems such as anxiety and depression.[24–26] Understanding and maximising the protective factors associated with resilient outcomes, while identifying and minimising the risk factors associated with non-resilient outcomes is an important goal for communities and societies.

Studies on resilience have generally not given much emphasis on exploring its association with healthy lifestyles including physical activity. Studies suggest there may be an association between physical activity and resilience.[27–29] As adolescence often place increasing importance and focus on their appearance, fitness and peer relationships, physical activity has potential as a modifiable protective factor.

Resilience has been identified as a priority area of research due to the potential positive impacts on health, wellness, and quality of life across the life course.[6] However, few researchers have highlighted the significance of assessing resilience in adolescents and resilience measurement tools have been developed primarily for adults.[30] Measuring resilience in adolescents has been a neglected area in this field of research.[22]

Adolescents are future assets for nations and communities – and make up almost a quarter of the Nepalese population.[31] However, high levels of adolescent distress have been recognized. It was reported in a global school-based student health survey that 13.9% of adolescents had considered suicide[23] while another study estimated that 43.3% of Nepalese adolescents suffered from Posttraumatic Stress Disorder and 38.1% from depression.[23,32] This clearly indicates a need to identify the factors associated with resilience in Nepalese adolescents, with the intention of guiding policy and practice to build resilience in Nepalese youth, and foster healthy and positive outcomes into adulthood.

This study is the first study of resilience in Nepalese adolescents using a standard measure of resilience among adolescents. The aims of this study were 1) to describe resilience in adolescents attending secondary school in Lalitpur, Nepal and 2) to identify the socio-demographic characteristics of Nepalese adolescents with low resilience.

# Materials And Methods

## Study Design, Setting And Participant Recruitment

This cross-sectional study was conducted in October–December 2018 at four secondary schools (two private and two public schools) that were selected by simple random sampling from the list of possible secondary schools provided by Education Development and Coordination Unit in Lalitpur, Nepal. With an assumed prevalence of high

resilience to be 46.4%,[33] allowable error of 5%, 95% CI and non-response rate 8%, the estimated sample size was 416. To attain a minimum sample of the 416 adolescent students, equal number of adolescent students was randomly selected by lottery method from each stratum (grades 9, 10, 11 and 12) of the selected schools. Study participants aged less than 13 years and more than 19 years were excluded from the study.

## Measures

### Resilience

In short, the ARQ measures the resources available to the adolescent at that particular point in time. Resilience was measured using the Adolescent Resilience Questionnaire (ARQ) which is a comprehensive tool to assess adolescents' resilience and covers five relevant ecological domains: Self, Family, Peers, School, and Community.[34] The ARQ comprises 88 items and 12 scales. Scales in the Self domain include Confidence, Emotional Insight, Negative Cognition, Social Skills, and Empathy/Tolerance. The family, peer, and school domains comprise a Connectedness and Availability scale, with a single Connectedness scale in the community domain.[34] The scales have good factor structure and reliability.[34]

With the permission of the ARQ lead author (DG), the ARQ was translated into Nepali language, and back-translated to English language. The back translator was blind to the original ARQ. The back-translation was then reviewed by DG and her feedback used to make minor revisions (e.g. minor wording changes were made in few items of the Nepali ARQ). The Nepali ARQ was then pretested with 96 adolescent students, recruited from one public and one private secondary school. The pretesting indicated that the questions in the Nepali ARQ were clear and correctly understood by Nepalese adolescents. This pretest data showed good overall reliability, with a Cronbach's alpha of 0.88.

Response options are 0 "Never" to 5 "All the Time". Negative items were reversed and a total resilience score calculated by summing each of the 88 items. Higher scores indicate higher resilience.

### Operational Definitions

Level of resilience was defined on the basis of the total ARQ score. Adolescents with high resilience were categorized as those who scored >1 standard deviation (SD) above the mean ARQ score (i.e. z-score≥1). Adolescents with moderate resilience were categorized as those who were between 1 SD above and below the mean (i.e. z-score −1 to 1). Low resilience was defined as those who scored less than 1 SD below the mean (i.e. z-score >-1). To examine socio-demographic factors associated with low resilience, a dichotomous variable was created of low versus moderate/high resilience.

### Socio-Demographic Factors

Background factors measured included: participant's age, gender, type of school, ethnicity, religion, birth order, type of family, permanent residence, parents' living status, mother's and father's education and occupation.

### Physical Exercise

Participant's involvement in physical exercise was measured using a 5-point rating scale ranging from "Never" to "Almost always/daily". Participant responding never or rarely were categorized as physically not active, while those reporting mostly/sometimes or Always/daily were categorized as physically active.

## Data Collection Procedure

Ethics approval was obtained from Nepal Health Research Council to conduct this study. Permission to conduct research with students was sought from the principal at each of the four randomly selected schools, with all principals providing consent. Parental consent was required for student participation and was requested in a letter sent home which was collected back after 2 days. Students completed the questionnaire during normal classroom time in the presence of a researcher. Before administration of the questionnaire, the purpose of study was explained. In addition, students were informed that they had the right not to participate in the study, could withdraw or stop completing the questionnaire at any time, and could skip any question they did not feel comfortable answering. They were reminded that they did not need to write their name on the questionnaire, their answers would be confidential and that their personal identity would not be disclosed. The researcher stressed that there were no right or wrong answers – the study was about their experiences. Students who agreed to participate were provided with the questionnaire.

## Data Processing And Analysis

Data were entered and analyzed in SPSS (IBM Corp. 2017. SPSS Version 25.0). Descriptive statistics were used to report socio-demographic characteristics and the resilience of the study participants. An independent samples *t*-test was performed to examine the difference in mean score of resilience among male and female participants. For analysis, adolescents' resilience was categorized into two groups – low and

high/moderate. Bivariate analysis was done and odds ratio (OR) with 95% CI was calculated to assess associations between physical activity and socio-demographic factors, with low resilience. Factors that were associated with low resilience at p-value <0.1 were taken for multivariable logistic regression analysis to assess their independent effect using enter method. Multicollinearity of the variables was assessed before including in multivariate analyses.

# Results

## Participants

Study participants were 416 secondary students in grades 9–12, attending one of four public (n=2) or private (n=2) schools. The demographic characteristics of the participants are reported in Table 1. Half the participants were female (54.8%) and all were aged between 13 and 19 years of age (M=16.1, SD=1.5). The most common religion reported was Hindu (60.3%) and the majority reported living in an urban setting. Based on birth order, around a third were the oldest children in their family (33.7%). The majority of the participants (92.5%) reported their parents' living status as living together (92.5%).

## Adolescent Resilience

The mean resilience score was 311.7 (95% CI 308.6–314.5) with SD of 32.1. Participant's resilience was categorized into low (<1 SD below the mean, 17.5%), moderate (mean±1 SD, 67.1%) and high (>1 SD above the mean, 15.4%). Further, to identify factors associated with low resilience, resilience was dichotomized into low resilience versus moderate/high resilience in Nepalese adolescents. The mean total ARQ and scale scores for all participants stratified by gender are reported in Table 2. Male adolescents reported higher total resilience scores ($t_{(414)}$=3.2, p=0.001). Also, there were differences observed between male and female adolescents on mean scale scores including individual social skills, empathy, family connectedness and peer availability. The mean total ARQ scores of male were 317.1± 32.6, while that of female was 307.1±30.9.

## Association Of Socio-Demographic Factors And Physical Activity With Low Resilience

Low resilience was associated with a number of socio-demographic characteristics of the participants (see Table 3). For

**Table 1** Socio-Demographic Characteristics And Physical Activity (N=416)

| Characteristics | N | % |
|---|---|---|
| Age (years) | | |
| 13–14 | 71 | 17.1 |
| 15–17 | 262 | 63.0 |
| 18–19 | 83 | 19.9 |
| Gender | | |
| Male | 188 | 45.2 |
| Female | 228 | 54.8 |
| Ethnicity | | |
| Brahmin | 101 | 24.3 |
| Chhetri | 86 | 20.7 |
| Janjati | 213 | 51.2 |
| Others | 16 | 3.8 |
| Religion | | |
| Hindu | 251 | 60.3 |
| Buddhist | 103 | 24.8 |
| Muslim | 40 | 9.6 |
| Christian | 22 | 5.3 |
| Type of family | | |
| Single/nuclear family | 237 | 57.0 |
| Joint family | 179 | 43.0 |
| Type of school | | |
| Public | 208 | 50.0 |
| Private | 208 | 50.0 |
| Birth order in family | | |
| First child | 140 | 33.7 |
| Second child | 155 | 37.3 |
| Third or higher child | 121 | 29.1 |
| Parent's living status | | |
| Living together | 385 | 92.5 |
| Separated/divorced | 31 | 7.5 |
| Permanent residence | | |
| Rural | 201 | 48.3 |
| Urban | 215 | 51.7 |
| Mother literate | | |
| Yes | 315 | 75.7 |
| No | 101 | 24.3 |
| Father literate | | |
| Yes | 379 | 91.1 |
| No | 37 | 8.9 |
| Mother employed | | |
| Yes | 291 | 70.0 |
| No | 125 | 30.0 |
| Father employed | | |

(*Continued*)

**Table 1** (Continued).

| Characteristics | N | % |
|---|---|---|
| Yes | 411 | 98.8 |
| No | 5 | 1.2 |
| Physically active | | |
| Yes | 107 | 25.7 |
| No | 309 | 74.3 |

example, girls had almost twice the odds of being in the low resilience category compare with boys, while a third or higher birth order was associated with 4 times the odds of having low resilience. Other factors associated with being in the low resilience category included attending a private school and living in an urban area (see Table 3). Reporting Janjati/other ethnicity was associated with lower odds of being in the low resilience category compared with Brahmin/Chhetri ethnicity (see Table 3).

To gain a clearer understanding of the associations between socio-demographic variables and low resilience, a multivariable analysis was conducted. Factors identified as significant or having p-value less than 0.1 in the univariate analyses were included in multivariable analysis (see Table 4). After adjusting for the other socio-demographic factors in the model, three factors remained associated with low resilience – not being physically active, a higher birth order and having parents who were separated or divorced.

## Discussion

In this first study to examine resilience in Nepalese students, we found low resilience in around one-fifth of the study participants. Similarly, while girls reported lower total resilience scores. This could be due to the socio-cultural context in developing nations like Nepal, where gender has a stronger influence on the available roles, priorities, opportunities, and availability of resources.[35] Nepalese boys are still dominant and favored in families and society, with greater freedom and opportunities. Higher resilience in males was also found in a number of studies conducted in other developing nations including India where differences in gender socialization are common and adolescent girls reported lower resilience and lower self-efficacy.[36,37] Moreover, these gender differences are attributed to the existing social psychological resources.[38] However, girls reported higher resilience under adverse life conditions

**Table 2** Mean ARQ And Scale Scores For All Participants And By Gender (N=416)

| ARQ Scale Scores | Sample (n=416) | Male (n=188) | Female (n=228) | p-value |
|---|---|---|---|---|
| | Mean (SD) | Mean (SD) | Mean (SD) | |
| Total ARQ | 311.7 (32.1) | 317.1 (32.6) | 307.1 (30.9) | 0.001** |
| Individual scales | | | | |
| Self-confidence | 32.5 (4.6) | 32.5 (4.5) | 32.6 (4.7) | 0.866 |
| Emotional insight | 30.1 (5.3) | 30.5 (5.5) | 29.8 (5.2) | 0.251 |
| Negative cognition | 21.8 (6.0) | 21.9 (5.7) | 21.7 (6.3) | 0.769 |
| Social skill | 25.9 (6.1) | 26.8 (5.9) | 25.2 (6.2) | 0.007** |
| Empathy/tolerance | 26.4 (5.6) | 27.7 (5.1) | 25.4 (5.7) | <0.001** |
| Family scales | | | | |
| Connectedness | 30.6 (4.8) | 31.2 (4.5) | 30.0 (4.9) | 0.009** |
| Availability | 11.5 (3.1) | 11.6 (3.1) | 11.4 (3.1) | 0.528 |
| Peer scales | | | | |
| Connectedness | 27.5 (4.6) | 27.9 (5.9) | 27.1 (4.4) | 0.073 |
| Availability | 25.7 (5.1) | 26.9 (4.8) | 24.7 (5.3) | <0.001** |
| School scales | | | | |
| Support | 28.9 (5.7) | 28.7 (5.9) | 29.2 (5.6) | 0.395 |
| Connectedness | 30.4 (4.9) | 30.6 (5.3) | 30.2 (4.8) | 0.431 |
| Community scales | | | | |
| Connectedness | 20.2 (5.6) | 20.7 (5.8) | 19.8 (5.5) | 0.073 |

**Note:** **P-value significant at 0.01 level.

**Table 3** Associations Of Socio-Demographic Factors And Physical Activity With Low Resilience Compared To Adolescents With Moderate Or High Resilience (N=416)

| Characteristics | Low Resilience, n (%) | High/Moderate Resilience, n (%) | Odds Ratio (95% CI) | p-Value |
|---|---|---|---|---|
| Age (years) | | | | |
| ≤15 years | 20 (13.9%) | 124 (86.1%) | Ref | |
| ≥16 years | 53 (19.5%) | 219 (80.5%) | 1.5 (0.86, 2.63) | 0.153 |
| Gender | | | | |
| Male | 25 (13.3%) | 163 (86.7%) | Ref | |
| Female | 48 (21.1%) | 180 (78.9%) | 1.74 (1.03, 2.95) | 0.039* |
| Ethnicity | | | | |
| Brahmin/Chhetri | 46 (24.6%) | 141 (75.4%) | Ref | |
| Other | 27 (11.8%) | 202 (88.2%) | 0.41 (0.24, 0.69) | 0.001** |
| Religion | | | | |
| Hindu | 49 (19.5%) | 202 (80.5%) | Ref | |
| Other | 24 (14.5%) | 141 (85.5%) | 0.7 (0.41, 1.2) | 0.192 |
| Type of family | | | | |
| Single family | 42 (17.7%) | 195 (82.3%) | Ref | |
| Joint family | 31 (17.3%) | 148 (82.7%) | 0.97 (0.58, 1.62) | 0.915 |
| Type of school | | | | |
| Public | 28 (13.5%) | 180 (86.5%) | Ref | |
| Private | 45 (21.6%) | 163 (78.4%) | 1.77 (1.06, 2.98) | 0.028* |
| Birth order in family | | | | |
| First child | 14 (10%) | 126 (90%) | Ref | |
| Second child | 17 (10.9%) | 138 (89.03%) | 1.11 (0.53, 2.34) | 0.78 |
| Third of higher | 42 (34.7%) | 79 (65.3%) | 4.79 (2.46, 9.32) | <0.001** |
| Parent's status | | | | |
| Living together | 51 (13.2%) | 334 (86.8%) | Ref | |
| Separated/divorced | 22 (70.9%) | 9 (29.03%) | 16.01 (6.98, 36.7) | <0.001** |
| Permanent residence | | | | |
| Rural | 24 (11.9%) | 177 (88.1%) | Ref | |
| Urban | 49 (22.8%) | 166 (77.2%) | 2.18 (1.28, 3.71) | 0.004** |
| Mother's literacy | | | | |
| Illiterate | 14 (13.9%) | 87 (86.1%) | Ref | |
| Literate | 59 (18.7%) | 256 (81.3%) | 1.43 (0.76, 2.69) | 0.263 |
| Father's literacy | | | | |
| Illiterate | 2 (5.4%) | 35 (94.6%) | Ref | |
| Literate | 71 (18.7%) | 308 (81.3%) | n.c. | |
| Mother's employment | | | | |
| Unemployed | 1 (0.8%) | 124 (99.2%) | Ref | |
| Employed | 72 (24.7%) | 219 (75.3%) | n.c. | |
| Father's employment | | | | |
| Unemployed | 2 (40%) | 3 (60%) | Ref | |
| Employed | 71 (17.3%) | 340 (82.7%) | n.c. | |
| Physically active | | | | |
| Yes | 40 (12.9%) | 269 (87.1%) | Ref | |
| No | 33 (30.8%) | 74 (69.2%) | 3.0 (1.77, 5.08) | <0.001** |

**Notes:** **P-value significant at 0.01 level; *P-value significant at 0.05 level.
**Abbreviation:** n.c., not calculated due to small numbers.

**Table 4** Multivariate Analysis Of Physical Activity And The Socio-Demographic Factors Associated With Low Resilience (N=416)

| Characteristics | Low Resilience n (%) | Adjusted Odds Ratio (95% CI) | p-Value |
|---|---|---|---|
| Gender | | | |
| Male | 25 (13.3%) | 1.0 (ref) | |
| Female | 48 (21.1%) | 1.34 (0.71, 2.54) | 0.367 |
| Ethnicity | | | |
| Brahmin/Chhetri | 46 (24.6%) | 1.0 (ref) | |
| Other | 27 (11.8%) | 0.57 (0.31, 1.06) | 0.075 |
| Type of school | | | |
| Public | 28 (13.5%) | 1.0 (ref) | |
| Private | 45 (21.6%) | 1.75 (0.82, 3.19) | 0.102 |
| Birth order in family | | | |
| First child | 14 (10%) | 1.0 (ref) | |
| Second child | 17 (10.9%) | 0.85 (0.37, 1.94) | 0.697 |
| Third of higher child | 42 (34.7%) | 4.26 (2.05, 8.87) | <0.001** |
| Parent's living status | | | |
| Living together | 51 (13.2%) | 1.0 (ref) | |
| Separated/divorced | 22 (70.9%) | 12.77 (4.82, 33.79) | <0.001** |
| Permanent residence | | | |
| Rural | 24 (11.9%) | 1.0 (ref) | |
| Urban | 49 (22.8%) | 1.28 (0.64, 2.55) | 0.479 |
| Physically active | | | |
| Yes | 40 (12.9%) | 1.0 (ref) | |
| No | 33 (30.8%) | 3.44 (1.78, 6.65) | <0.001** |

**Note:** **P-value significant at 0.01 level.

showing higher competence and enculturation scores in a study conducted among migrant Indian youths living in America.[39] Adolescent girls in Japan also reported higher resilience.[40] This may again reflect the socio-cultural contexts – where there is greater gender equity, with greater flexibility in roles and opportunities for girls and women, girls report higher resilience. Building supportive policies and environment and creating equal opportunities and respect for girls and women would potentially have a positive impact across the life course.

Surprisingly, the univariate analysis revealed that adolescent students in private schools had more than one-and-half the odds of having low resilience than those attending public school. Resilience is built upon adversity, and it is more likely that children from private schools, which come from families with a better socioeconomic status, are also less exposed to adversities, thus being less prepared to face problems in life in comparison to those from public schools, who grow up having to deal with a variety of stressors. This can further be explained by the Resilience model which points out that personal disruption and adversity promote growth, increase protective factors, reintegrates psychology and enhances capabilities to negotiate life events.[41,42] While public schools in Nepal are run by the government, with students having access to free education, most of the private schools' education costs are relatively high. It could be expected that students attending private schools would have greater resources, and potentially be less likely to be categorized as having low resilience. It may be that students at public schools might have greater peer support and also their background may have provided them with more opportunities to develop coping skills in adverse conditions. A study conducted in Karnataka, India similarly found that adolescents attending private and public schools reported a significant difference in resilience.[43] While all schools are likely to benefit from introducing appropriate strategies to enhance the level of resilience in adolescents, this may be more important in the private school setting in Nepal. Such strategies could include: training secondary school teachers to recognize characteristics associated with low resilience among adolescents; identifying vulnerable adolescents and supporting them to build protective factors within themselves, their families, friends and community. However

further research, including a wider range of schools, would be required to ensure the generalisability of these findings.

In the present study, adolescents who were physically inactive were more than three times likely to have low resilience than adolescents who were physically active. This finding is congruent with the study done in Hawaiian adolescents which showed physical fitness among adolescents as one of the most robust resiliency factors among both native and non-native Hawaiian adolescents.[44] A study conducted among Spanish adolescents also showed that engagement in higher levels of physical activity increased their likelihood of being resilient by 1.4 times (95% CI= 1.22–1.54).[28] A study among Aboriginal Australian adolescents reported an association between resilience and regular physical activity, where prosocial behavior score was used as a proxy indicator for assessing resilience.[45] The results reported that regular physical exercise was associated with higher scores on the prosocial behaviour scale. Studies have revealed that involvement in regular physical activity has added benefits for mental health in adolescence.[46,47] The findings of the current study suggest that encouraging physical activity could be a protective factor associated with building resilience in Nepalese adolescents. While the use of a cross-sectional design limits ascertainment of direction of association (i.e. it is possible that resilient adolescents are more able to do physical exercise), increased physical activity may offer advantages that could plausibly build resilience. Further research is recommended that may be helpful in establishing the direction of the association.

In the current study, maternal employment and divorced or separated families were more common for adolescents in the low resilience category. In Nepal, as with other developing nations, women have a lower rate of paid employment and are more commonly employed in maintaining their family and household.[31,48] The proportion of adolescents with divorced/separated parents in the low resilience category was higher than for those in the high/moderate resilience category. The theory provided by the Resilience model has discussed the family as a protective factor.[41,42] Certain levels of adversity may be positive for adolescents to develop resilience when they are provided with enough protective factors, and the family is the most important protective factor for this age group, however, if the mother has to divide her attention between work and family, children in such unstable family environment may struggle to have a resilient reintegration after disruption processes. Furthermore, the classic research with resilient children at extreme adverse contexts, and rather the loss in family presence as a protective factor explain the lower resilience for this group.[5] Perhaps the lower resilience in adverse conditions among adolescents with divorced or separated parents may also be the effect of separation and broken family that could be linked with emotional challenges for adolescents, and is often related with poor economic outcomes. Nepal is also a country where family divorce or separation is not common. Maternal employment or family separation in this context may pose greater challenges for adolescents than in contexts where they are much more the norm. Having "available" and emotionally connected parents is known to be associated with resilience among adolescents.[44,49] It may be that extra support or approaches to supporting parents to be emotionally and physically available to an adolescent may be required in families where both mothers and fathers are working, or parents have separated.

Adolescent who were 3rd or more in their family were four times as likely to report low resilience as compared to firstborn children. This finding suggests that there are benefits in Nepalese society of being the first born child. There is some evidence that birth order and spacing is associated with risk or resilience in later life – the quick arrival of siblings has multiple impacts on family resources and maternal availability, and sibling relationships can be a source of both risk and resilience.[50,51] Extra support may be required in large families to support resilient outcomes for younger children to build resilience across the lifespan.

This study is one of the first to describe resilience in Nepalese adolescents using a multi-domain, standard measure, to highlight socio-demographic factors associated with risk or resilience. However, study limitations need to be taken into consideration. The study findings may not be generalizable to all Nepalese adolescents, as it was focused on a single district located in the central region of Nepal; it lacks the diversity of adolescents across Nepal, and with different socio-demographic composition including ethnicity. Additionally, as the questionnaire was administered in the classroom setting, there might be peer effects/influence in the participant responses.

## Conclusion

This study reports novel results, with implications for adolescents in Lalitpur and other similar districts of Nepal, showing a range of socio-demographic factors associated with low resilience. While some factors were modifiable (e.g. physical exercise), others were not (e.g.

birth order, divorced parents), however, greater understanding will enhance opportunities for support. As all adolescents will experience adversity at some stage in their lives, it is vital for families, health workers and schools to be aware of what factors that are associated with risk or resilience, and to understand how and when to intervene to support resilient outcomes for Nepalese adolescents.

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## Disclosure

The authors report no conflicts of interest in this work.

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