

Resilience and Health Risk Taking/Protective Behaviour among Adolescents of Patiala, Punjab

Dr. Naina Sharma* and Manmeet Kaur**

* Assistant Professor, Department of Distance Education, Punjabi University, Patiala,

** Research Scholar, Department of Psychology, Punjabi University, Patiala.

Abstract

Health risk-taking behaviour has been associated with health damaging behaviours such as violence, bullying, alcohol use, smoking, substance abuse, risky sexual behaviours etc. Present study aims to assess the presence of risk/protective behaviour and the role of resilience and health risk-taking behaviour among adolescents. The sample of the study comprised of 532 adolescents (238 Males and 294 Females) in the age range of 15 to 18 years enrolled in 11th and 12th grade (Humanities stream). Data was drawn randomly from different private and public schools of Patiala, Punjab, India. Questionnaires comprising Youth risk behaviour surveillance system (YRBSS) and Resiliency scales for children and adolescent (RSCA) were used to collect the related information. Results revealed that drugs (14%), concussions (13%), violence (12%), and bullying (12%) were found to be present as health damaging behaviour, while breakfast (37%) and safety (20%) were existing as health protective behaviour. This study found low resilience (mastery and relatedness) correlated with an increased risk of suicide ideation, smoking, alcohol, drugs and sexual intercourse. Furthermore, emotional reactivity was found to be positively correlated with violence, bullying, suicide planning, suicide attempt and sexual intercourse.

Keywords: Health risk-taking behaviour, resilience, adolescence, health protective behaviours.

Adolescence period is accompanied by need for more freedom, independence, normative experimentation, peer pressure and less parental supervision, which results in weaker inhibitions to engage in any healthy or unhealthy behaviour (Mulye et al., 2009; McNeely and Blanchard, 2009). Available evidence suggests that adolescents engage in variety of risky behaviours, including substance use, poor diets, vehicular speeding, lack of seatbelt use, risky sexual behaviour, and sedentary lifestyles, which makes them susceptible to various physical and mental health problems like suicide, overweight/obesity, diabetes, cardiovascular diseases and sexually transmitted infections. (Palamara, 2012). According to National Family Health Survey (NFHS, 2014-15) conducted in 29 states indicated percentage of adolescents aged 15-19 years for alcohol use (8.9% of men and 0.5% of women), who have ever had sexual intercourse (8.2% of men and 17.7% of women) and suicide (42% of men and 29% of women). Mokdad et. al (2016) reported that globally, youth violence was the fourth leading cause of mortality among the 15-19 year old adolescents and found second among males in 2013 (Zang et. al, 2017). Plethora of studies found that adolescents in the age group of 15-19 years are high on health risk taking behaviours.

Health risk-taking behaviour can be defined as engaging, often impulsively in behaviours that are high in subjective desirability or excitement but which carry the potential for injury or loss (Kerr & Stallin, 2000; Geier et al., 2010). Health risk-taking behaviour has been used to associate with health damaging behaviours such as violence, bullying, alcohol use, smoking, substance abuse, risky sexual behaviours, suicidal behaviours including suicidal ideation, suicidal planning, suicidal attempt and concussions. They are those activities or behaviours that are detrimental to the health and well-being of youth (Lamb, 1992). It is also linked with reduced protective behaviours such as safety, body weight, breakfast, physical activity and health related behaviours.

There are individual differences in health risk taking behaviour. Some are more vulnerable as compared to others. **Jessor (1977)** includes five major explanatory domains or sources of variance: biology, social environment, perceived environment, personality and behaviour constitute a general explanatory framework for risk behaviour in context of risk and protective factors. Smith (2012) and Grotberg (2009) found that the main difference between individuals who adapt very well despite facing risks and individuals who end up in maladaptation is the existence of resilience as one of the protective factor. Resilience is the presence of both risks and protective factors that either help bring about a positive outcome or reduce or avoid a negative outcome. Resilience theory is concerned with risk exposure among adolescents, is focused on strengths rather than deficits. It focuses on understanding healthy development in spite of risk exposure (Zimmerman, 2005). Within society, adolescents face many adversities or stressors in their lives. Resilience is considered the ability that a person gains positive achievements despite exposure to significantly adverse life conditions. **Resilience** refers to *the process of overcoming the negative effects of risk exposure, coping successfully with traumatic experiences, and avoiding the negative trajectories associated with risks* (Garmezy et al., 1984; Luthar et al., 2000; Masten & Powell, 2003; Rutter, 1985; Werner, 1992). A dynamic process that an individual exhibit positive behavioural adaptation (competence) when he/she is exposed to significant adversity, trauma, tragedy, threat, stress, or other negative condition of life (adversity). Resilience as a status refers an individual did not engage in health risk behaviours such as suicide, violence, and substance uses. Adversity can be defined as negative environmental conditions that interfere with or threaten the accomplishment of age-appropriate developmental tasks.

Villasana and colleagues (2016) reported that resilience considered as protective factor and leads to overcome difficulties through coping strategies. Perez-Fuentes et. Al (2020) discussed that youth with high levels of resilience usually show less risk of mental illness, behavioural disorders, low academic performance or interpersonal conflicts and determine protective factors (Family Cohesion, Personal Competence, Social Competence, Social Resources and Orientation toward Goals) contributing to the process of positive adaptation. Buckley and Chapman (2018) showed that the presence of risk factors increased the odds of engagement in unintentional and intentional injury-risk behaviour and the presence of promotive factors decreased the odds, supporting a compensatory model of resiliency. Resilience represents the interaction between risk factors (vulnerability) and protective resources (protection). Youth who have good outcomes in the face of high risk are described as being resilient (Rutter, 1993).

McCalman (2016) identified some risk and protective factors associated with suicide risk among adolescent and found that resilience is one of the important protective factor in relation to suicidal behaviours. Sharma (2015) found that suicide occurs due to lack of emotional regulation, indicative of the hopelessness, poor social support and low social problem solving skills. Resilience has focused on adolescents qualities and their ability to stay away from alcohol and drugs (Reeves, Dustman, & O'Neill, 2011; LaFromboise, Hoyt, Oliver, & Whitbeck, 2006; Stone, Whitbeck, Chen, Johnson, & Olson, 2006). Resilience represents the individual's and the society's strength to withstand the destruction of suicide (McLaren & Challis, 2009; Yoder, Whitbeck, Hoyt, & LaFromboise, 2006); the ravages of drugs and alcohol (LaFromboise, et al., 2006; Wong et al., 2006); the degradations of physical (Hauser & Allen, 2006; Powers, Ressler, & Bradley, 2009), and sexual abuse (Duran et al., 2009; Edmond, Auslander, Elze, & Bowland, 2006; Segal, 2009). Researchers have found adolescents resilient to stressful or negative life events are more optimistic, high self-esteem (Byrne, 2003) and also positive affect (Scheier, Bootvin and Miller, 1999) as a result they are low on health risk-taking behaviours.

Youth in the age group of 13-19 years constitutes one of the precious resources of India and a systematic review from 2000 to 2019 yielded numerous studies for youth offenders. Statistics (NFHS, 2015-16) identified adolescents as distinct group that needs special attention and targeted health services. Young people tend to be less informed that they often have a sense of having unlimited power, feelings of invulnerability and impulsiveness that can result in changes in perception and practice and lead to reckless behaviour. There are gaps in

understanding, explaining and controlling health risk-taking behaviour in adolescents. It is crucial to understand processes and mechanisms that affect their psychological health, identify interventions and psycho-education programmes that protects them. Statistics also indicates that youth of India in the age group 15-19 years suffer from various health impacting behaviours and conditions that need urgent attention of strategic approaches by public health professionals. In Indian scenario there is dearth of the representative study therefore this is protocol of mixed methods study designed to investigate the prevalence of various health risk taking behaviours and relationship between resilience and health risk-taking behaviours.

OBJECTIVES

1. To study the percentage cases of various types of health risk taking/protective behaviour of adolescents
2. To examine the relationship between Resilience and Health risk taking/protective behaviour of adolescents.

HYPOTHESES

The following hypotheses were formulated:

1. Percentage of health risk taking behaviour for substance abuse, bullying and violence will be more as compared to risky sexual behaviour and suicide.
2. Resilience
 - Sense of mastery would be negatively correlated with health risk taking behaviours and positively correlated with health protective behaviours.
 - Sense of relatedness would be negatively correlated with health risk taking behaviours and positively correlated with health protective behaviours.
 - Emotional Reactivity would be positively correlated with health risk taking behaviours and negatively correlated with health protective behaviours.

SAMPLE

A total of 946 adolescents (Male=444 and Female=502) age ranging from 15 to 18 years enrolled in 11th and 12th (Humanities stream) were taken in the present study. The sample was drawn from various public and private schools of Patiala, Punjab, India. Only those adolescents were included in the study who were found to be either high or average on YRBSS. After identification, 532 adolescents (Male=238 and Female=294) participated in the study and their socio demographic information is given in Table 1. Percentages were used to examine the prevalence of different categories with respect to demographic variables in the study.

Table 1 Socio-demographic information of participants (N=532)

Demographic Variables	Category	N	%
Gender	Males	238	45%
	Females	294	55%
	Total Sample	532	100%
Educational Qualification	+1	442	83%
	+2	90	17%
	Total	532	100%
Age	15 years	38	7%
	16 years	172	33%
	17 years	230	43%
	18 years	92	17%
	Total	532	100%
	Public school	234	44%
	Private school	298	56%

	Total	532	100%
Family Status	Joint	172	32%
	Nuclear	360	68%
	Total	532	100%
Residential Status	Rural	168	32%
	Urban	364	68%
	Total	532	100%

The following psychological measures were used:

- Youth risk behaviour surveillance system (YRBSS by Centers for disease control and prevention, 2017):** YRBSS comprised of statements of Risk behaviours. There risk behaviours reflected the tendency of weaker inhibitions which can result into injury or threat to their health. Violence (VIO) refers to involving into physical fight intended to hurt or damage others; Bullying (BUL) is unwanted, aggressive behaviour among school aged children that involves a real or perceived power imbalance; Suicidal ideation (SID) indicates thinking about suicide or wanting to take one's own life; Suicide planning and attempt (SPA) includes considering, or planning suicide, and can occur during periods of stress, depression, or anxiety; Alcohol use (ALC) refers to amount of drinking alcohol too much or being unable to control alcohol consumption; Drugs (DRG) is any substance that causes a change in an organism's physiology or psychology when sniffed or consumed; Sexual intercourse (SIC) includes sexual contact between individuals for sexual pleasure or reproduction; Concussion (CON) is mild injury to the brain that results in temporary headaches, dizziness, nausea, difficulty in concentration. Protective behaviours include compliance to Safety (SAF); Bodyweight (BWT) indicates the how an individual describes; Breakfast (BFT); Physical activity (PHA) and Health related behaviours (HRB) includes a query about asthma, hours of sleep and academic performance evaluated by individual. The coefficient of reliability is (.574) determined by cronbach's alpha reliability test.
- Resiliency scales for children and adolescents (RSCA by Sandra Prince-Embury, 2006):** RSCA, 64 item resilience scale was used to assess adaptive outlook that employs hypothetical constructs to better understand the constant adaptation of the individual (Prince-Embury et. al., 2016). RSCA comprised of three global scales based on the three-factor model of personal resiliency: Sense of Mastery (SOM), Sense of Relatedness (SOR) and Emotional Reactivity (REA). SOM includes 20 items of three subscales optimism, self-efficacy and adaptability, SOR is comprised of 24 items of four subscales trust, support, comfort and tolerance and REA is defined by 20 items of three subscales sensitivity, recovery and impairment. The response format of the measure is a 5-point Likert type scale (0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Often and 4 = Almost always). The coefficient of reliability is .894 determined by cronbach's alpha reliability test.

PROCEDURE

The present study is a correlational design measuring the role of resilience on health risk taking behaviour. For this purpose a sample of 946 students from various public and private schools of Patiala comprising males (444) and females (502) in the age range of 15 to 18 years were approached. After seeking their consent for participation in the study a brief session was conducted to appraise the students about the intent of the study. Questionnaires were administered and the students were identified as high or average on risk taking behaviour on the basis of their scores on YRBSS. After identification, (Male=238 and Female=294) 532 students data was used for analysis.

RESULTS AND DISCUSSION

Keeping in view the nature of the study, Percentage was calculated to study the presence of risk taking and protective behaviour (Table 2) and Pearson Product Moment coefficient of correlation was computed to study the relationship of resilience with health risk taking behaviours and health protective behaviours. Correlations between

resilience domains and health risk taking behaviours (risk factors and protective factors) ranges from -0.28 to 0.30 with twenty four values of coefficients of correlations attaining level of significance at .05 level and .01 level in Table 3 and 4.

Table 2 Percentage of Health Risk/Protective Behaviour in Adolescents (N=532)

S.No	Domains	Low	Average	High
1	Violence (VIO)	57%	31%	12%
2	Bullying (BUL)	55%	33%	12%
3	Suicide (SUI)	70%	24%	6%
4	Cigarette Smoking (SMO)	92%	2%	6%
5	Drinking Alcohol (ALC)	78%	17%	5%
6	Drugs (DRG)	51%	35%	14%
7	Sexual Intercourse (SIC)	92%	4%	4%
8	Concussions (CON)	65%	22%	13%
9	Health related behaviour (HRB)	28%	61%	11%
10	Safety (SAF)	13%	67%	20%
11	Body Weight (BWT)	30%	56%	14%
12	Breakfast (BFT)	27%	36%	37%
13	Physical Activity (PHA)	12%	70%	18%

Figure 1 Depicts Percentage of Health Risk/Protective behaviour

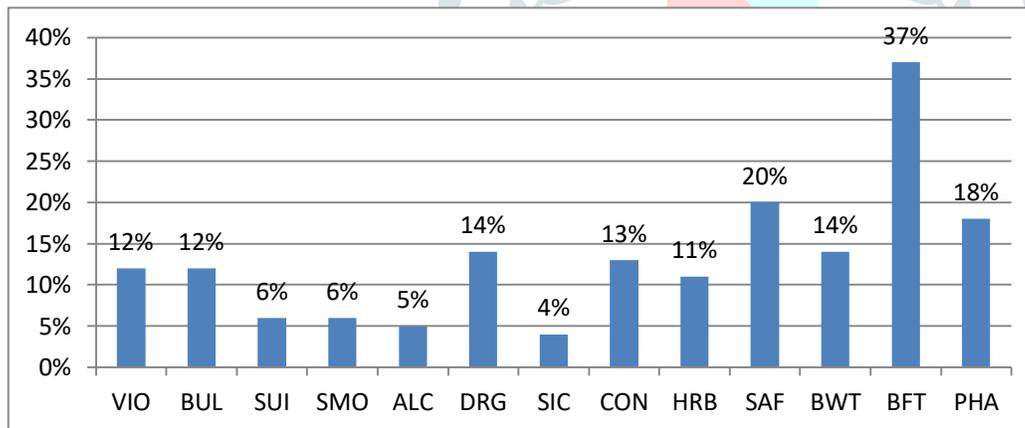


Table 2 and Figure 1 revealed percentage of various domains of health risk-taking behaviour. Drugs (14%), Concussions (13%), violence (12%), bullying (12%) found more prevailing in adolescents rather than other health risk taking behaviour. The research studies of Punjab indicate that Punjab stood third in substance abuse and drug abuse (National Drug Dependence treatment centre (NDDTC), All India Institute of Medical sciences (AIIMS), New Delhi, 2020) and drug addiction problems built up the majority case attendance of psychiatrists in Punjab (Randhawa et al., 2020). Similarly some health protective behaviour were also prevalent in adolescents such as breakfast (37%) and safety (20%). National Family Health Survey (2015-16); Global School-based Student Health Survey (2006 to 2014) demonstrated that most health-risk taking behaviours among adolescents tended to increase across world. Baiden et. al (2020) examined data from YRBSS (2017), 13,659 adolescents aged 14-17 years analyzed suicidal ideation is highly positively associated with other health risk behaviours like bullying, sexual abuse, smoking, alcohol use, hopelessness, overweight, substance abuse and insufficient sleep as the main explanatory variable. Ziaei et. al (2017) conducted GSHS (Global School based Health survey) on 1517 high school students aged 15-17 years in Iran found that prevalence of suicidal ideation is lower than other health risk taking behaviour. Boislard and Zimmer-Gemback (2012) reviewed challenges in risky sexual behaviour such as

STIs, unintended youth pregnancy, unprotected intercourse, accumulation of more sexual partners and identified its correlates such as substance use, antisocial and delinquent behaviours, pubertal development etc. Owusu (2008) discussed that Global School based Health Survey (2008) data from Ghana also showed that 14.6% of the students seriously considered attempting suicide during the 12 months before the survey and 15.4% of the students made plans to attempt suicide during the 12 months preceding the survey.

Table 3 Correlation between resilience (sense of mastery, sense of relatedness and emotional reactivity) and Health risk taking behaviours

	<i>VIO</i>	<i>BUL</i>	<i>SID</i>	<i>SPA</i>	<i>SMO</i>	<i>ALC</i>	<i>DRG</i>	<i>SIC</i>	<i>CON</i>
<i>SOM</i>	0.04	0.05	** -0.28	** -0.12	** -0.21	-0.03	-0.06	** -0.12	* -0.09
<i>SOR</i>	0.03	0.06	* -0.10	-0.01	** -0.25	** -0.13	** -0.23	** -0.14	0.03
<i>REA</i>	* 0.11	** 0.30	0.08	** 0.20	0.07	0.01	-0.04	** 0.27	** -0.20

p* < 0.05 = 0.09, p** < 0.01 = 0.12

Table 3 shows significant and negative correlation between **sense of mastery** and suicide ideation ($r = -0.28$, $p < 0.01$); suicide planning and attempt ($r = -0.12$, $p < 0.01$); smoking ($r = -0.21$, $p < 0.01$); sexual intercourse ($r = -0.12$; $p < 0.01$); and concussions ($r = -0.09$, $p < 0.05$) while no significant correlation was found with violence, bullying, alcohol use and drugs. This indicates that sense of mastery is a protective factor encompassing positive attitude along with confidence, self-esteem, being receptive to feedback and there by drop out health risk taking behaviour. Weiss (2008) found that positivity and adaptability leads to sense of mastery among adolescent and restricts maladaptive behaviour. The resilience framework posits that effective mobilization of psychological factors (sense of mastery) is fundamental to achieving good outcomes when adversity is present (Ledesma, 2014). **Suicidal ideation** is concerned with wishes, ideas, and the tendency towards committing suicide. Evans (2005) reviewed around one third of adolescents aged 12-20 years have reported suicidal ideation and Suicide is ranked as the second leading global cause of death for young people aged 10–24 years, third among male adolescents aged 10–24 years, and is the most common cause of death among girls aged 15–19 years (Hawton, Saunders and O' Connor, 2012). Researchers Hirschtritt et. al (2015) reported association between internal resilience and suicidal ideation, peer victimization among 9th and 11th grade students in California Healthy Kids Survey. Results suggested that efforts to decrease suicidal ideation among adolescents directed towards both preventing peer victimization and strengthening of internal resilience by inculcating sociability, communication skills, self-esteem and self-efficacy (Olsson et. al, 2003). The study indicated that increase in optimism, self-efficacy and adaptability decreases the rate of suicidal ideation. Suicidal ideation has been reported as an important risk factor for suicide planning and attempt. **Suicidal plan** refers to the formulation of a specific method by which one intends to kill oneself (Silverman et al., 2007b) and suicidal attempt is intentional self-inflicted poisoning, injury or self-harm which may or may not have a fatal intent or outcome (WHO, 2014). When an adolescent experiences distressing emotions (hopelessness), feels isolated, have an urge to self-harm and is going through a dissociative state, a person may not be completely aware of what he/she is doing (Robinson, 2017). Several researchers also indicated that psychological factors such as loneliness, being bullied, conflictual parent and peer relationships, loss of significant other, poor school work, socioeconomic factors and other risk behaviours like involved in physical fights, substance use, hunger influence adolescent suicidal behaviours (Quarshie et al., 2015; Oppong Asante et. al, 2017). Researcher described that understanding of suicidal behaviour is important for developing interventions and has been summarized highlighting previous abuse, mood disorders, severity of symptoms of depression and hopelessness as key risks (Witt et al., 2018). Hetrick et. al. (2020) reported that the need for young people to maintain autonomy and control is being helpful to deal with urges to self-harm. **Smoking** has negative association with sense of mastery. Lappan et. al. (2018) explored the negative effect of smoking with psychological well being (Life satisfaction, optimism, positive affect, purpose in life). Adolescent **sexual behaviour** raises concern about risky sexual behaviour, positive sexual development, and other emotional and

social consequences. Furthermore, recognizing sexuality and moving towards a positive sexual development or focused on positive sexual health promotion is associated with greater well-being, development of self-identity, autonomy, body-esteem, perceptions of entitlement to desire and pleasure, sexual self-efficacy (Boislard and Zimmer-Gemback, 2012). These results indicate that increases self-efficacy, optimism, trust, comfort, support and adaptability decrease the frequency of risk behaviours.

Similar trends were obtained from **Sense of relatedness** as it was found to have significant negative correlation with suicide ideation ($r = -0.10$, $p < 0.05$); smoking ($r = -0.25$, $p < 0.01$); alcohol use ($r = -0.13$, $p < 0.01$); drugs ($r = -0.23$, $p < 0.01$); and sexual intercourse ($r = -0.14$, $p < 0.01$) while no significant correlation was obtained with violence, bullying, and concussions. It indicates that being supported to connect with others for support also reduces the rate of recurrence of risk factors. Olivier, Archambault and Dupere (2020) found that sense of relatedness is especially important for youth at-risk of low engagement because of an accumulation of behaviour and social relationship problems. Spirit et. al. (2003) reported that family functioning, feeling of hopelessness and inability to regulate affect were associated with depressive symptoms leading to **suicidal ideation**. Suicide ideation or intent in adolescent has been shown to have an impact on family relationships, wellbeing, and mental health (Morgan et al., 2013; Mars et al., 2014; Beckman et al., 2016). **Cigarette smoking** among adolescents is a major public health concern because smoking poses many health risks, such as various forms of cancer, cardiovascular diseases and respiratory diseases. Plethora of studies reported that smoking is second leading cause of preventable premature deaths in the world. HBSC (Health behaviour in school-aged children, 2008) Survey provided information that 43% of adolescents reported to smoke every day, more prevalent in age group of 15-17 years and it increases with age (Thakur and Sharma, 2020; Hansen et. al., 2020; Nicalsen et. al., 2015). Researchers, Kim and Chun (2018) discussed various other risk factors involved in smoking behaviour like poor social relations, low academic performance, parental divorce/separation, lack of parental supervision and support, close friends who smoke or family members who smoke. Robinson (2016) discussed that relationship disintegration leads to indulge in substance use i.e. smoking and alcohol use. Lewis and other researchers (2019) focused that individuals with **alcohol use and other substance use** are more likely to experience problems in close relationships, including higher levels of interpersonal distress, greater conflict and less cohesion with family members, and low social integration and low social support.

Significant and positive correlations were found between **emotional reactivity** and violence ($r = 0.11$, $p < 0.05$); bullying ($r = 0.30$, $p < 0.01$); suicide planning and attempt ($r = 0.20$, $p < 0.01$); sexual intercourse ($r = 0.27$, $p < 0.01$) while significant negative correlation was found between emotional reactivity and concussions ($r = -0.20$, $p < 0.01$). No significant correlation was obtained between emotional reactivity and suicide ideation, smoking, alcohol use, and drugs. Rabinowitz et. al. (2016) explored that youth's emotional reactivity (sensitivity, recovery and impairment) moderated the relationship between social (family relationships and peer group) and behavioural factors (health behaviours).

Table 4 Correlation between resilience (sense of mastery, sense of relatedness and emotional reactivity) and Health protective factors

	<i>SAF</i>	<i>BWT</i>	<i>BFT</i>	<i>PHA</i>	<i>HRB</i>
<i>SOM</i>	* 0.11	0.06	** 0.17	-0.02	0.04
<i>SOR</i>	0.02	0.05	0.01	-0.05	-0.03
<i>REA</i>	-0.04	** 0.29	** 0.17	0.01	-0.08

$p < 0.05 = 0.09$, $p < 0.01 = 0.12$

A perusal of **Table 4:** revealed that there was positive and significant correlation between sense of mastery and safety ($r= 0.11, p<0.05$); breakfast ($r= 0.17, p<0.01$) while no significant correlation was found between sense of mastery and bodyweight, physical activity and health related behaviours. These results indicate that the opportunity to interact with and experience of cause and effect relationships in the environment increases their safety measures regarding physical health. Weiss (2008) reported that developmental constructs i.e. mastery is associated with the ability to adjust oneself with self -belief, personal strengths and positive attitude.

Sense of relatedness was found to have no significant correlation with protective factors i.e. safety, bodyweight, breakfast, physical activity and health related behaviour. Although previous research findings indicate sense of relatedness predicted engagement in safety measures, achievement of healthy behaviours and wellbeing (King, 2015).

Emotional reactivity was found to have a positive correlation with bodyweight ($r =0.29, p<0.01$) and breakfast ($r =0.17, p<0.01$) while no significant correlation was found between emotional reactivity and safety, physical activity and health related behaviour. It refers that intensity and duration of adolescents negative emotional responses plus the ability to modulate these responses make impact on physical and emotional recovery by eating habits and life style factors (Barnhart, Braden & Jordan, 2020). Researchers have also demonstrated that positive emotional reactivity plays an important role in the development of organized eating attitudes in adolescents (Evans et al., 2019).

Conclusion

In summary, our result suggests that drugs, concussions, violence and bullying were found to be present as health damaging behaviour. The analysis of correlation is indicative that the resilience factors combine to effect adolescent lives with regard to risk taking and protective behaviour. Low levels of resilience (mastery and relatedness) are associated with an increased risk of suicide ideation, smoking, alcohol, drugs and sexual intercourse. Increased emotional reactivity is positively associated with increased level of violence, bullying, suicide planning and attempt and sexual intercourse. Furthermore, results confirm previous findings that sense of mastery was associated with increased safety measures and breakfast. Thus resilience may be considered as a vital protective factor in risk taking behaviour of adolescents.

Implications

The resiliency theory enables program designers and public health educators to develop resources under a unifying theme in a comprehensive manner. Primarily the findings highlight that there is a need to consider the interaction and accumulation of risk and protective factors with resilience. Given the potential complexity of risk and protective factors associated with health behaviours, intervention efforts will need to consider how they can be tailored to the relevant specific factors at an appropriate developmental period. The findings suggest that intervention is required to build and support protective factors at an individual and contextual level. Improving resilience among adolescents should be considered as a preventive tool against health risk taking behaviours.

Limitations

The research must be viewed in light of study limitations. There is always scope for additional factors to be considered. Additional examples of factors may include attachment to neighbourhood, parenting, and individual identity etc. A more relevant future approach will be to weight health risk taking and health protective factors to create an emerging picture. A longitudinal assessment would provide more clarity. This study highlights the value of health risk taking behaviours and health protective behaviours for adolescents and, in particular, the relevance of resiliency theory with domains mastery, relatedness and emotional reactivity. A further limitation to the study is

lack of specificity in our understanding of socio-demographic variables such as socio-economic status and we used constructs of violence and bullying that represent a collection of different experiences in them. Future research might examine implications for specific health compromising behaviour along with specific health risk-taking behaviour and health protective behaviours.

References

- Evans E, Hawton K, Rodham K, et al. (2005). The prevalence of suicidal phenomena in adolescents: a systematic review of population-based studies. *Suicide Life Threat Behav.* 35:239–50.
- Hawton K, Saunders KEA, O'Connor RC. Self-harm and suicide in adolescents. *Lancet* 2012; 379: 2373–82.
- Hirschtritt, M. E., Ordóñez, A. E., Rico, Y. C., & LeWinn, K. Z. (2015). Internal resilience, peer victimization, and suicidal ideation among adolescents. *International Journal of Adolescent Medicine and Health*, 27(4). doi:10.1515/ijamh-2014-0060
- Hodgkinson, R., Beattie, S., Roberts, R. et al. Psychological Resilience Interventions to Reduce Recidivism \in Young People: A Systematic Review. *Adolescent Res Rev* (2020). <https://doi.org/10.1007/s40894-020-00138-x>
- Kim HH, Chun J. Analyzing multilevel factors underlying adolescent smoking behaviors: the roles of friendship network, family relations, and school environment. *J Sch Health*. 2018;88(6):434–443.
- King, R. B. (2015). Sense of relatedness boosts engagement, achievement, and well-being: A latent growth model study. *Contemporary Educational Psychology*, 42, 26-38.
- Ledesma, J. (2014). Conceptual frameworks and research models on resilience in leadership. *Sage Open*, 4, 1–8. doi:10.1177/2158244014545464
- McCarthy, S. A., Ford, T. C., Lomas, J. E., & Stough, C. (2020). Subclinical autistic traits mediate the relationship between emotional intelligence and resiliency in adolescents. *Personality and Individual Differences*, 158, 109845.
- Miranda, J. O., & Cruz, R. N. C. (2020). Resilience mediates the relationship between optimism and well-being among Filipino university students. *Current Psychology*, 1-10.
- Nicotine & Tobacco Research, 2018, 1–6 doi:10.1093/ntr/nty185 Original investigation Received September 21, 2017; Editorial Decision August 30, 2018; Accepted September 5, 2018 Advance Access publication September 14, 2018
- Olivier, E., Archambault, I., & Dupéré, V. (2020). Do needs for competence and relatedness mediate the risk of low engagement of students with behavior and social problem profiles?. *Learning and Individual Differences*, 78, 101842.
- Olsson CA, Bond L, Burns JM, Vella-Brodrick DA, Sawyer SM. Adolescent resilience: a concept analysis. *J Adolesc* 2003; 26:1–11.
- Oppong Asante, K., Kugbey, N., Osafo, J., Quarshie, E. N.-B., & Sarfo, J. O. (2017). *The prevalence and correlates of suicidal behaviours (ideation, plan and attempt) among adolescents in senior high schools in Ghana*. *SSM - Population Health*, 3, 427–434. doi:10.1016/j.ssmph.2017.05.005
- Owusu, A. (2008). Ghana Country report on the Global School-based Health Survey (GSHS). Atlanta, CA: Center for Disease Control and Prevention (CDC)
- Quarshie, E. N. B., Osafo, J., Akotia, C. S., & Peparah, J. (2015). Adolescent suicide in Ghana: A content analysis of media reports. *International Journal of Qualitative Studies on Health and Well-being*, 10(1), <http://dx.doi.org/10.3402/qhw.v10.27682>.

Spirito, A., Valeri, S., Boergers, J., & Donaldson, D. (2003). Predictors of Continued Suicidal Behavior in Adolescents Following a Suicide Attempt. *Journal of Clinical Child & Adolescent Psychology*, 32(2), 284–289. doi:10.1207/s15374424jccp3202_14

Szabó, Á., Klokgieters, S. S., Kok, A. A., van Tilburg, T. G., & Huisman, M. (2020). Psychological resilience in the context of disability: A study with Turkish and Moroccan young-old immigrants living in the Netherlands. *The Gerontologist*, 60(2), 259-269.

Thakur, D., Gupta, A., Thakur, A., Mazta, S.R., & Sharma, D. (2014). Predictors of cigarette smoking and its predictors among school going adolescents of North India. *South Asian J Cancer*, 3(4), 193–19.

