Youth Suicide in New Zealand: a Discussion Paper[*]

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Not all suicide is the same and youth suicide often has different drivers to suicide at later ages. Further while much is spoken and argued about its prevention, it remains a complex and contentious area with much advocacy for unproven interventions.

In particular this paper makes the point that youth suicide is more than simply a mental health issue and that, with what we know at present, the focus must also include an emphasis on primary prevention starting from very early in life. This means promoting resilience to the inevitable exposure to emotional stresses and building self-control skills in early childhood and primary school years, by using approaches that we already know about. It means promoting mental health awareness and ensuring that there are competent and adequate adult and peer support systems in secondary schools. This must be backed up by a capacity to find and rapidly support those children and young adults who are in mental distress and ensuring that the needed interventions and therapy are early and effective.

The changing context of a young person
The way that young people live their lives has changed greatly over recent decades and this has created a range of poorly understood but probably critical pressures that affect their psyche and behaviour. Family structure has changed; childrearing practices have changed; for many, the level of parental engagement has changed. Technology has changed the nature of their social networks and communication; media, celebrities and other social factors can create unrealistic expectations and

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pressures on young people. Compared to previous generations, youth face many more choices at an earlier age, but at the same time may have less clarity as to their path ahead. The role of traditional community supports such as sports, church and other youth groups has declined. Youth now have more access to credit cards and money that gives them greater freedoms. The pace of these sociological and technological changes is unprecedented and it is not surprising that for many young people, particularly those with less psychological resilience, it can leave them with a growing sense of dislocation.

Epidemiology of youth suicide in NZ
National rates of suicide in young people should be treated with caution as there are reasons why many countries may under-report. New Zealand's youth suicide mortality rate in 2010 was 15.6 per 100,000 adolescents aged 15 to 19 years – the highest among reported OECD rates[1]. From 1st July 2014 to 30th June 2016, there were a total of 238 suicides among New Zealanders aged 12–24 years (the age group defined as "Youth" per New Zealand's Youth Development Strategy). The suicide mortality rate for Māori aged 15–24 years in 2012 was 48.0 per 100,000 Māori youth population, compared with the non-Māori youth rate of 16.9 per 100,000[2]. Since 1996, suicide mortality rates have generally declined for non-Māori but apparently not for Māori. This may be partly because the absolute numbers of Māori suicide deaths are low and the rates fluctuate quite a lot from year to year, so trends can be hard to ascertain. There is very little difference between the rates of urban and rural youth suicide[3].

The rates of hospital admission for self-harm are about 50–100-fold greater than those for suicide and many more young people may have suicidal thoughts[4], even though they may not commit self-harm or attempt suicide. Statistics for having thoughts about suicide or committing self-harm or apparent suicidal attempts are not easily interpretable because most young people who harm themselves do not intend to commit suicide and there is variable conversion from attempt to success depending on the methods of self-harm that, in turn, varies considerably across countries. Yet, for studies of prevention of suicide, it is generally those young people who are admitted to health services who become the focus of intervention attempts. This means we do not see the whole picture of young people and suicidal thoughts, self-harm, and suicide because we are looking only at those who present to health services.

The many factors that impinge on the risk of youth suicide
Youth suicide cannot be considered as just a mental disorder. A number of factors interplay. Studies in the US[5] and elsewhere[4,6] show that the likelihood of a suicide attempt is associated with a number of factors including:

- socio-demographic factors and restricted educational achievement;
- family discord and poor family relationships;
- the tendency to being impulsive;
- what is termed externalising behaviour (anti-social behaviours, and alcohol problems);

- what is termed internalising behaviour (e.g., depression);
- low self-esteem, hopelessness, loneliness;
- drug and alcohol misuse;
- a history of suicidal behaviour among family and friends; and
- partner- or family-violence exposure in adolescence.

Impulsive-aggressive behaviours are commonly associated with suicide in young people and decline as a factor with age[7]. Youth who demonstrate antisocial or delinquent behaviours are 10 times more likely to have attempted suicide[5].

The key conclusion from these studies is that youth suicide needs to be regarded as much more complex than simply outward evidence of mental disorder. Rather, it needs to be seen as the result of a state of *stressed, impaired or underdeveloped self-control* in which mental health, emotional and brain development, alcohol, sociological, economic, and other factors interact to put some young people at greater risk.

Adolescence as a vulnerable period – brain, biology, and behaviour
A tendency towards adolescent distress and psychological illness must be understood in the setting of how humans develop physically and emotionally before and during adolescence, as well as the environmental and social stresses that are in play both before and during adolescence. This broader understanding has profound implications for what is needed in order to reduce the risks of teenage suicide, self-harm, and suicidal thoughts.

As humans begin to go through puberty, there are a number of changes in the brain. It is particularly important to understand that the first steps in the maturation of the adolescent brain (new connections are made and new brain pathways develop) increase the likelihood of risk-taking behaviours. The brain pathways that are associated with our impulse control and judgment, which balance out risk-taking tendencies, develop somewhat later in adolescence[8] and, indeed, do not fully mature until well into our twenties[9]. This is true in both males and females but male adolescents generally demonstrate higher levels of sensation-seeking and lower levels of impulse control than females, and males take longer to mature their self-control pathways[10].

There is now compelling evidence that children who enter puberty at a younger age are at far greater risk of behavioural, psychological, and emotional disorder. There are probably multiple reasons for this but most relate to:

- a longer period before those counterbalancing inhibitory brain pathways fully mature;
- greater sociological and sexual pressures related to the mismatch between the earlier onset of physical signs of maturity and psychosexual ideation and chronological age: and
- socialising with older peers who may be engaged in or express anti-social behaviours.

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There is unequivocal evidence that children who enter puberty relatively early:

- are more likely to indulge in alcohol and drug abuse[11];
- often demonstrate more impulsive behaviours[12]; and
- boys show greater impairment in the quality of their relationships[13].

We see the implications of these observations in the patterns of adolescent mental disorder and distress. For example, girls who have early onset of puberty have been shown to have greater risks of alcohol and drug usage, eating disorders, and mood disorders[14], are more likely to have been victims of violence, and, show a 50% increase in the rate of attempted suicide[15,16]. Among boys, the impact was even more concerning: the rate of attempted suicide was 5-fold higher in those showing early, compared with average maturation. They also showed a doubling in the rate of depressive symptoms and a higher use of tobacco, alcohol, and illicit drugs[15]. Such studies highlight the importance of efforts to enhance self-control in children so as to reduce the risks fo morbidity in their transition to adulthood.

There has been, in western countries, a progressive fall in the age of puberty from around 17 years in the early 19th century to early teens by the 1960s[17]; this younger age continues to decline to the present. The age of onset of puberty varies around the world and the reasons for this are not well understood although genetics probably plays a role. Emotional stress in infancy/childhood[18,19] and excess childhood obesity[20] both accelerate the rate of maturation.

Variation in suicide rates across population groups
Many factors appear to contribute to explaining the different prevalence of youth suicide across different population groups. They include:

- living in environments where low self-esteem within the peer group is common[21,22];
- poverty, inequality, and social fragmentation[23-25];
- having a high rate of engagement with the justice sector and a greater presence of gangs[26,27];
- higher use of drugs and alcohol[22,28]; and
- suicidal behaviour becoming a means of demonstrating worth to the peer group[22].

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Deficits in self-control
Adolescence is a period of relatively poorly developed self-control and heightened impulsive behaviour. This is why some stressors that do not lead to troubled emotional responses in more mature individuals can do so in some in this age group. So, rather than resilience, which might be expected – and needed – we see severe and harmful (including self-harm) responses. These stressors can include aspects of engagement with peers (e.g., bullying, including cyber-bullying) and emotional situations (e.g., break up of relationships).

A further possible factor[29] is a substantial change in the way we raise children: they now tend to be under tight control in the pre-pubertal period but less control post-puberty (as reflected in: school subject choice; parental controls on time, place and behaviour; access to credit cards; access to internet, etc.). In contrast, 50 years ago, western child rearing practice followed a loose–tight pattern in which pre-pubertal children had more freedoms, especially to undertake risky play, but adolescence was much more constrained. This reversal may have resulted in a reduction in the capacity to self-assess risk in adolescence.

Alcohol and drugs
Alcohol intoxication or a history of alcohol abuse are often associated with youth suicide[30]. Alcohol misuse is often associated with triggering events (conflicts in peer and intimate relationships) and, in relation to suicidal behaviours, is probably underestimated and under-reported. Furthermore, alcohol reduces self-control, can increase despair and depression and, among those with mental disorders, exacerbates symptoms.

New Zealand data show that considerably more than half of youth suicides involve alcohol or illicit drug exposure. Internationally, across all ages, alcohol is more strongly associated with suicidal behaviour in males than females[30]. Adolescence is a time in which alcohol use is a normative part of risk taking and this behaviour is exaggerated in NZ adolescents by the easy availability and very low prices of alcohol. There is also an elevated risk of suicide in children of heavy drinkers, both mothers and fathers[31].

Peer influences, bullying and cyber-bullying
Adolescence is a stage of life when there is a "trading of dependency on parents for dependency on peers": it is therefore not surprising that peer relationships affect mood and behaviour, including possible suicidal behaviour. Such peer relationships may be positive or negative (sometimes both at the same time). It is easy to understand how peer pressure (e.g., influence of older peers in gangs), peer bullying, or breakdowns in emotional relationships can lead to deleterious consequences. So gang exposure and involvement and exposure to family violence create greater risk.

Peer influences may be particularly evident in the growing evidence for online bullying leading to self-harm. Bullying in schools occurs in many countries to varying degrees but the reported rates are high in New Zealand. The effects of bullying on social and emotional well-being are well documented: increased anxiety and depression, and more aggression and antisocial behaviour; all of these are also linked to poor educational outcomes[32].

Cyber-bullying (where actions through digital means are intended to harm peers) has been associated with similar negative consequences, including anxiety and lower academic achievement and sometimes suicide[33]. Some groups are more vulnerable than others (e.g., LGBTQI youth). Cyber-bullying may be less common than traditional bullying but they tend to occur together. Cyber-bullying is less avoidable because of the ubiquity of social media and are less able to be detected or

monitored by parents and teachers. Further, the cyber world is less amenable to third-party prevention or interruption; thus, large ripple effects are possible across on-line communities. The lack of personal and social control in cyber-bullying suggests that there is a risk of greater impact than that of in-person bullying. More research is needed on this point but current evidence suggests that the range of negative consequences is the same (i.e., social, academic, and health), with cyber-bullying possibly having greater effects on thinking about suicide than traditional face to face bullying[34].

A related issue is that the social media environment and changed patterns of interpersonal behaviours may be changing both self-awareness and the capacity for empathy for others. Again this may mean that, although adolescence is a period in which independence from parents is gained, the associated need to grow dependency on strong and robust peer support[35] may not evolve adequately.

It is now clear that adolescents with either very low usage or excessive usage of the internet are at risk of poorer mental health and depressive symptoms in particular[36]. We need to "better understand how, for whom, and under what conditions interactions with mobile technologies influence still developing social relationships, brains, and bodies."[37] It is clear that apart from extreme amounts (both too little or too much), it is the "context (where, when and how digital media are accessed), content (what is being watched or used), and connections (whether and how relationships are facilitated or impeded)" that matter[38].

The media, clusters, and contagion
There has been debate about media publicity and youth suicide. On one hand, discussion about suicide is critically important to promote public awareness so that young people know to seek help when distressed and so that there is an understanding of our collective social obligation to know how and where to direct them towards that help. On the other hand, there is concern about the risk of contagion – this can lead to clusters of both self-harm and youth suicide.

The phenomenon of contagion and suicide clusters is well demonstrated in young people, including in New Zealand, and this must be taken into account in developing prevention strategies. Contagion can be interpreted as reflecting immature impulse control and psychological immaturity that leads to inappropriate responses to the emotional disturbance that follows another committing suicide. Sometimes it may reflect the attempt to seek similar identity/value through the media and the social attention that may follow a suicide, and sometimes it may reflect loyalty to the peer group.

Clusters need not be geographical but can also be based on social connection or a psychological closeness that the individual feels to the person who has committed suicide[39]. It is important to have strategies to reduce the risk of contagion and suicide clusters – this includes preventing unhelpful media reporting, identification of those who may be particularly vulnerable and taking practical interventions, particularly in schools, to reduce the risk of a spread of suicidal behavior. The role of

well-trained 'gatekeepers' (both peers and adults) to better recognize warning signs of potential suicide has, at least, short-term benefit[40].

There is general agreement that it is unwise to give any publicity to the *mode* of successful suicide as this appears to encourage copying. A further concern in young people is that the suicide victim may be glorified after death at his or her funeral or in the media in a way that might encourage other young people also to seek greater self-worth and recognition through suicide. The risk of contagion appears to be affected by how the media report suicide: for example, whether it is reported on the front page; whether suicide is in the headline; whether it involves a celebrity, whether the incident is reported repeatedly; and whether details are reported of the individual suicide and the factors leading up to it[41]. Media guidelines (including, if possible, social media) about how suicide is reported remain important; minimally, all efforts must be made to avoid glorification in the media. In New Zealand a set of media guidelines [42] was prepared by the media sector in 2011. They are largely consistent with a very extensive report by Public Health England in 2015[39], which provides detailed guidelines on how suicide should be reported in the media and discussed in communities and schools so as to reduce the risk of contagion and clusters.

Societal and Cultural dimensions
Developing a sense of self-identity is an essential part of transition through adolescence. How that will develop depends on multiple factors including:

- the nature of the community;
- belief about a future;
- family;
- community; and
- education.

Where there is a low community sense of self-esteem or self-worth, this will impact on the individual and may become a major influence especially if peers and family also share such values. The presence of multiple and intense stressors in such environments, coupled with a reduced sense of resilience within any community are likely interact to increase the impact of any immediate stress. Although the obvious answer is one of improvement of living standards – and that is highly likely to be important[43] – evidence also suggests that there are other important strategies that improve community resilience and adaptability[44]. The sense of individual and community self-worth can be enhanced in multiple ways.

The sad reality is that there are a disproportionate number of Māori youth suicides. It is difficult to know how the multiple factors discussed above contribute to this greater risk but it is easy to hypothesize how they might do so. It will be important that there is ongoing engagement with Maori, both in research to understand their perspective and in designing intervention programmes that are likely to be effective.

Mental illness

All this brings to light the challenge of differentiating mental illness as a *cause* of suicide in young people from depression as *an associated symptom* of disorganized brain, biological, social, and behavioural development. Although cognitive behavioural therapy (CBT) is effective in treating depression in adolescents, it does not reliably reduce the risk of suicidal attempts, even when it does reduce suicidal thoughts[45]. In general, psychotherapy appears to be only marginally helpful in reducing suicide.

The use of anti-depressant pharmaceuticals appears to be no more effective than CBT in preventing suicide. Indeed, some antidepressant therapy appears to be associated with greater risks of suicide than using CBT[46]; in general, the use of all anti-depressant therapies requires an appropriate safety plan.

Implications for reducing the incidence of youth suicide
Suicide prevention is complicated because we do not understand the causes well enough at the individual level. Completed suicide is a rare event so it is difficult to study in the way we can study influenza or diabetes. It is really hard to predict at an individual level, with perhaps the best indicator being a previous suicide attempt/self-harm even though most who commit self-harm (which may or may not be an attempted suicide) do not go on to commit suicide. Nevertheless, the 8–9% of all youth who are suicide attempters – with their high subsequent life-course costs (as they often have long-term psychological morbidity) to themselves, family, whānau, and society – are an important risk-group to target.

However, given the fact that most who commit suicide do not come to attention until too late (i.e. after they have committed suicide) and it is impossible to predict reliably, there is a growing focus internationally on primary and secondary intervention – aiming at providing young people with the capacity to better withstand the stresses of the teenage years and, in particular, addressing their impulsivity by enhancing self-control in the early years.

There is no definitive solution but there is a growing consensus on the following[47,48].

Primary prevention: This must start in the pre-pubertal period and is aimed at developing resilience to the inevitable stressors of growing up, and promoting development of impulse control. The broader benefits of this approach[49] include major spillover benefits to educational achievement and, later, in employment, family stability, and quality-of-life measures.

Such approaches must start early in life – and early childhood is an important opportunity for enhancing these skills and should be an evaluable focus of all early childhood education. There needs to be intense engagement with the most vulnerable families in the first years of their children's life.

There is clear and strong evidence that a primary prevention strategy using well-defined and structured activities (e.g., Good Behaviour Game) focused on behaviour in primary school children as young as 6 and 7 contributes to reducing later

adolescent suicidality as well as other unwanted behaviours[50,51], and we would strongly suggest the introduction of this into all primary schools.

Despite their popular appeal, it is less clear as to the effectiveness of other formal suicide prevention programmes in schools and in the community, except in reducing contagion. Indeed some programmes may actually increase the risk of suicidality[52], hence the importance of oversight and formal evaluation of all such programmes.

Other aspects of primary prevention include reducing access of adolescents to alcohol – both, as noted above, a cause of depression and an aid to suicide. Structured non-sport related activity (but not sporting activity which may increase it) for young people appears to protect against binge drinking[53].

The social investment approach suggests the need for a greater focus on the intersection between multiple stressors in vulnerable families: promoting community self-worth probably will have benefit as will encouraging employment opportunities and promoting economic development in disadvantaged communities.

An element of increasing importance may be enhancing the skills of young people to live within a digital world[†]. Cyber-bullying research is relatively new and there is a paucity of investigations into psychological interventions. Nonetheless, there are promising online psychological treatments (e-therapies) for both victims and bullies[33]. Further, family-based prevention programmes and media-literacy education are producing promising results[54]. Prevention and intervention studies show that the rates of bullying and victimisation can be reduced in school settings. The most effective programmes combine whole-school cultural changes using messaging, value statements, and information to establish shared norms, together with training in specific skills in media literacy, self-control, and social skills; they involve teachers, parents, and peers. Longer-term programmes over 6 months or more appear to be more effective than those that are short-term or involve one-off interventions[55].

Secondary prevention: This refers to programmes that focus on the adolescent period and seek to identify those at risk and make referrals when necessary. Such programmes include activities that seek to increase understandings and change attitudes about youth suicide and to enhance the capacity to intervene and prevent. The role of teachers, trained counselors and peer leaders is seen as key. There is some evidence to support the importance of adults actively engaging with distressed students, but outside those situations where close counseling relationships have been developed, these programmes tend to be distressingly ineffective[47]. Better results are claimed when secondary prevention is combined with primary prevention and engaging peer leaders (that is well-trained youth leaders)[56].

[†] This is the subject of separate work we are now undertaking at the request of the Minister of Education

There is limited evidence to suggest that screening adolescents for depression in the primary-care setting, when combined with an appropriate therapeutic response, has modest benefits[57,58]. There is also growing but preliminary evidence to support some technology-enhanced interventions such as text messaging, web-based applications, etc.[59].

Tertiary prevention: This focuses on those who are identified as being at particular risk, for example having attempted suicide. It generally involves CBT or medication or both; as noted above, the effect on suicidality, as opposed to other aspects of mental health, is relatively small. Although investing in youth mental health is a critical priority for the reduction of adolescent and adult mental health disorders, it cannot be the only strategy for reducing youth suicide.

Summary and conclusions

Youth suicide remains a complex, multifaceted challenge. A focus on adolescent mental health, although important, is not sufficient. Rather, we conclude that the high-priority need is to introduce and reinforce programmes focused on primary prevention starting early in life and developing secondary prevention strategies involving well-trained and engaged mentors including peer mentors. Understanding and co-design with our communities and particularly with Māori perspectives will be crucial at each stage as we develop, test and take to scale approaches shown to make a difference.

The primary prevention approach involves strategies to improve impulse control and executive function from early childhood and this has broad spillover benefits. It involves combining these critical interventions in early childhood and primary education with secondary prevention approaches in adolescents and it requires a social investment approach particularly focusing on those communities with low resilience and self-esteem.

References

1.   UNICEF Office of Research. Innocenti Report Card 14: Building the Future - Children and the Sustainable Development Goals in Rich Countries. Florence: UNICEF Office of Research – Innocenti, 2017.
2.   Ministry of Social Development. The Social Report 2016: Te pūrongo oranga tangata. Wellington: The Ministry of Social Development, 2016.
3.   Ministry of Health. Suicide Facts: Deaths and intentional self-harm hospitalisations 2013. Wellington: Ministry of Health, 2016.
4.   Hawton K, Saunders KEA, O'Connor RC. Self-harm and suicide in adolescents. *The Lancet* 2012; **379**(9834): 2373-82.
5.   Thompson MP, Swartout K. Epidemiology of Suicide Attempts among Youth Transitioning to Adulthood. *Journal of Youth and Adolescence* 2017.
6.   Holland KM, Vivolo-Kantor AM, Logan JE, Leemis RW. Antecedents of Suicide among Youth Aged 11–15: A Multistate Mixed Methods Analysis. *Journal of Youth and Adolescence* 2017; **46**(7): 1598-610.

7.   McGirr A, Renaud J, Bureau A, Seguin M, Lesage A, Turecki G. Impulsive-aggressive behaviours and completed suicide across the life cycle: a predisposition for younger age of suicide. *Psychological Medicine* 2008; **38**(3): 407-17.

8.   Smith AR, Chein J, Steinberg L. Impact of socio-emotional context, brain development, and pubertal maturation on adolescent risk-taking. *Hormones and Behavior* 2013; **64**(2): 323-32.

9.   Vara AS, Pang EW, Vidal J, Anagnostou E, Taylor MJ. Neural mechanisms of inhibitory control continue to mature in adolescence. *Developmental Cognitive Neuroscience* 2014; **10**: 129-39.

10.   Shulman EP, Harden KP, Chein JM, Steinberg L. Sex Differences in the Developmental Trajectories of Impulse Control and Sensation-Seeking from Early Adolescence to Early Adulthood. *Journal of Youth and Adolescence* 2015; **44**(1): 1-17.

11.   Castellanos-Ryan N, Parent S, Vitaro F, Tremblay RE, Séguin JR. Pubertal development, personality, and substance use: A 10-year longitudinal study from childhood to adolescence. *Journal of Abnormal Psychology* 2013; **122**(3): 782-96.

12.   Mathias CW, Charles NE, Liang Y, et al. Pubertal Maturation Compression and Behavioral Impulsivity among Boys at Increased Risk for Substance Use. *Addictive disorders & their treatment* 2016; **15**(2): 61-73.

13.   Mendle J, Harden KP, Brooks-Gunn J, Graber JA. Peer relationships and depressive symptomatology in boys at puberty. *Developmental Psychology* 2012; **48**(2): 429-35.

14.   Kaltiala-Heino R, Marttunen M, Rantanen P, Rimpelä M. Early puberty is associated with mental health problems in middle adolescence. *Social Science & Medicine* 2003; **57**(6): 1055-64.

15.   Michaud PA, Suris JC, Deppen A. Gender-related psychological and behavioural correlates of pubertal timing in a national sample of Swiss adolescents. *Molecular and Cellular Endocrinology* 2006; **254**: 172-8.

16.   Deppen A, Jeannin A, Michaud P-A, Alsaker F, Suris J-C. Subjective pubertal timing and health-compromising behaviours among Swiss adolescent girls reporting an on-time objective pubertal timing. *Acta Paediatrica* 2012; **101**(8): 868-72.

17.   Gohlke B, Woelfle J. Growth and Puberty in German Children: Is There Still a Positive Secular Trend? *Deutsches Ärzteblatt International* 2009; **106**(23): 377-82.

18.   Kim K, Smith PK, Palermiti A-L. Conflict in childhood and reproductive development. *Evolution and Human Behavior* 1997; **18**(2): 109-42.

19.   Alvergne A, Faurie C, Raymond M. Developmental plasticity of human reproductive development: Effects of early family environment in modern-day France. *Physiology & Behavior* 2008; **95**(5): 625-32.

20.   Lee Y, Styne D. Influences on the onset and tempo of puberty in human beings and implications for adolescent psychological development. *Hormones and Behavior* 2013; **64**(2): 250-61.

21.   Durie M. Mental Health Promotion in a Global Village. Ngā Tini Whetū: Navigating Māori Futures. Wellington, NZ: Huia Publishers; 2011: 11-27.

22.   Lawson-Te Aho K. A Review of Evidence: A Background Document to support Kia Piki Te Ora O Te Taitamariki. Wellington: Te Puni Kōkiri/Ministry of Māori Development, 1998.

23.   Curtis B, Curtis C, Fleet RW. Socio-economic factors and suicide: The importance of inequality. *New Zealand Sociology* 2013; **28**(2): 77-92.

24. Kerr WC, Kaplan MS, Huguet N, Caetano R, Giesbrecht N, McFarland BH. Economic Recession, Alcohol, and Suicide Rates: Comparative Effects of Poverty, Foreclosure, and Job Loss. *Am J Prev Med* 2017; **52**(4): 469-75.

25. Whitley E, Gunnell D, Dorling D, Smith GD. Ecological study of social fragmentation, poverty, and suicide. *BMJ* 1999; **319**(7216): 1034-7.

26. Schlemmer J. New Zealand gangs: A collaborative approach to reducing reoffending and the harms caused by gangs. *Practice* 2014; **2**(3): 21-3.

27. Bennett ST, Liu JH. Historical trajectories for reclaiming an indigenous identity in mental health interventions for Aotearoa/New Zealand—Māori values, biculturalism, and multiculturalism. *International Journal of Intercultural Relations* 2017.

28. Oakley Browne MA, Wells JE, Scott KM, editors. Te Rau Hinengaro: The New Zealand Mental Health Survey. Wellington: Ministry of Health; 2006.

29. Gluckman P, Hanson M. Mismatch : Why our world no longer fits our bodies. Oxford: OUP; 2006.

30. Norström T, Rossow I. Alcohol Consumption as a Risk Factor for Suicidal Behavior: A Systematic Review of Associations at the Individual and at the Population Level. *Archives of Suicide Research* 2016; **20**(4): 489-506.

31. Rossow I, Moan IS. Parental Intoxication and Adolescent Suicidal Behavior. *Archives of Suicide Research* 2012; **16**(1): 73-84.

32. Gardella JH, Fisher BW, Teurbe-Tolon AR. A Systematic Review and Meta-Analysis of Cyber-Victimization and Educational Outcomes for Adolescents. *Review of Educational Research* 2017; **87**(2): 283-308.

33. Foody M, Samara M, Carlbring P. A review of cyberbullying and suggestions for online psychological therapy. *Internet Interventions* 2015; **2**(3): 235-42.

34. van Geel M, Vedder P, Tanilon J. Relationship between peer victimization, cyberbullying, and suicide in children and adolescents: A meta-analysis. *JAMA Pediatrics* 2014; **168**(5): 435-42.

35. Steinberg L, Silverberg SB. The Vicissitudes of Autonomy in Early Adolescence. *Child Development* 1986; **57**(4): 841-51.

36. Bélanger RE, Akre C, Berchtold A, Michaud P-A. A U-Shaped Association Between Intensity of Internet Use and Adolescent Health. *Pediatrics* 2011; **127**(2): e330.

37. George MJ, Odgers CL. Seven Fears and the Science of How Mobile Technologies May Be Influencing Adolescents in the Digital Age. *Perspectives on Psychological Science* 2015; **10**(6): 832-51.

38. Blum-Ross A, Livingstone S. Families and Screen Time: Current Advice and Emerging Research. London: Media Policy Project, London School of Economics and Political Science., 2016.

39. Hawton K, Lascelles K, Ferrey A. Identifying and responding to suicide clusters and contagion: A practice resource. London: Public Health England, 2015.

40. Ewell Foster CJ, Burnside AN, Smith PK, Kramer AC, Wills A, A. King C. Identification, Response, and Referral of Suicidal Youth Following Applied Suicide Intervention Skills Training. *Suicide and Life-Threatening Behavior* 2017; **47**(3): 297-308.

41. Gould MS, Kleinman MH, Lake AM, Forman J, Midle JB. Newspaper coverage of suicide and initiation of suicide clusters in teenagers in the USA, 1988–96:

a retrospective, population-based, case-control study. *The Lancet Psychiatry* 2014; **1**(1): 34-43.

42.   Ministry of Health. Reporting Suicide: A resource for the media. Wellington: Ministry of Health (http://www.health.govt.nz/system/files/documents/ publications/reporting-suicide-a-resource-for-media-dec2011.pdf), 2011.

43.   Wilkinson R, Pickett K. The Spirit Level: Why Greater Equality Makes Societies Stronger. New York: Bloomsbury Press; 2011.

44.   Wilson DS. Human Cultures are Primarily Adaptive at the Group Level (with comment). *Cliodynamics: The Journal of Theoretical and Mathematical History* 2013; **4**(1).

45.   Labelle R, Pouliot L, Janelle A. A systematic review and meta-analysis of cognitive behavioural treatments for suicidal and self-harm behaviours in adolescents. *Canadian Psychology/Psychologie canadienne* 2015; **56**(4): 368-78.

46.   March J, Silva S, Petrycki S, et al. Fluoxetine, cognitive-behavioral therapy, and their combination for adolescents with depression: Treatment for Adolescents With Depression Study (TADS) randomized controlled trial. *JAMA* 2004; **292**(7): 807-20.

47.   Wilcox HC, Wyman PA. Suicide Prevention Strategies for Improving Population Health. *Child and Adolescent Psychiatric Clinics* 2016; **25**(2): 219-33.

48.   Bennett K, Rhodes AE, Duda S, et al. A Youth Suicide Prevention Plan for Canada: A Systematic Review of Reviews. *Canadian Journal of Psychiatry Revue Canadienne de Psychiatrie* 2015; **60**(6): 245-57.

49.   Gluckman P, Hayne H. Improving the Transition: Reducing Social and Psychological Morbidity During Adolescence. Auckland, NZ: Office of the Prime Minister's Science Advisory Committee, 2011.

50.   Kellam SG, Reid J, Balster RL. Effects of A Universal Classroom Behavior Program in First and Second Grades on Young Adult Outcomes. *Drug and alcohol dependence* 2008; **95**(0 1): S1-S4.

51.   Kellam SG, Mackenzie ACL, Brown CH, et al. The Good Behavior Game and the Future of Prevention and Treatment. *Addiction Science & Clinical Practice* 2011; **6**(1): 73-84.

52.   Kutcher S, Wei Y, Behzadi P. School- and Community-Based Youth Suicide Prevention Interventions: Hot Idea, Hot Air, or Sham? *Can J Psychiatry* 2017; **62**(6): 381-7.

53.   Modecki KL, Barber BL, Eccles JS. Binge Drinking Trajectories Across Adolescence: For Early Maturing Youth, Extra-Curricular Activities Are Protective. *Journal of Adolescent Health* 2014; **54**(1): 61-6.

54.   Reid Chassiakos Y, Radesky J, Christakis D, Moreno MA, Cross C. Children and Adolescents and Digital Media. *Pediatrics* 2016; **138**(5).

55.   Scheithauer H, Tsorbatzoudis H. Guest editorial: Efficacious and effective preventive interventions to tackle cyberbullying in the school environment (and rest of this special issue - pages 111-206). *Aggressive Behavior* 2016; **42**(2): 111-3.

56.   Wyman PA, Brown CH, LoMurray M, et al. An Outcome Evaluation of the Sources of Strength Suicide Prevention Program Delivered by Adolescent Peer Leaders in High Schools. *American Journal of Public Health* 2010; **100**(9): 1653-61.

57.   Williams SB, Connor EA, Eder M, Whitlock EP. Screening for Child and Adolescent Depression in Primary Care Settings: A Systematic Evidence Review for the US Preventive Services Task Force. *Pediatrics* 2009; **123**(4): e716.

58.   Aseltine RH, James A, Schilling EA, Glanovsky J. Evaluating the SOSsuicide prevention program: a replication and extension. *BMC Public Health* 2007; **7**(1): 161.

59.   Kreuze E, Jenkins C, Gregoski M, et al. Technology-enhanced suicide prevention interventions: A systematic review. *J Telemed Telecare* 2017; **23**(6): 605-17.