REVIEW ARTICLE

Trend of Alcohol Use among Adolescents and the Relation With Demographic, Environmental and Psychological Factors

Selly Jaimon, *Pravina Deligannu, Fredie Robinson

Department of Public Health Medicine, Faculty of Medicine & Health Science, Universiti Malaysia Sabah, Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia

ABSTRACT

Introduction: Annually, the harmful use of alcohol contributes to approximately 3.3 million deaths globally, with 4.6% of alcohol-related mortality and 4.0% of the burden of disease and injury in Southeast Asia. Adolescence is an essential stage of a child's development transitioning into adulthood. During this time, adolescents are vulnerable to various social issues that can impact their well-being and development, experimenting with alcohol among others. This review explores the alcohol consumption trend among adolescents and the factors associated, particularly in Malaysia. There are not many studies that explored alcohol use and the associated factors. This partially is attributed to policies restricting alcohol use for adolescents and that it is a sensitive issue for certain communities. Though, adolescents who are current drinkers made up 11.1% of the drinking population with significantly higher consumption in males (15.8%) than females (6.2%). The three prime factors influencing alcohol use among adolescents are socio-demographic, environmental and psychological. Hence, policies on alcohol reduction should be developed for adolescents specifically in school and programmes addressing family functioning taking account of local settings appropriateness.

Keywords: Alcohol use; Adolescents; Demographic factors; Environmental factors; Psychological factors

Corresponding Author:
Pravina Deligannu,
Email: pravinadeligannu@ums.edu.my
Tel: +60143678506

INTRODUCTION

According to WHO, a current drinker is defined as one who has consumed more than just a few sips of an alcoholic beverage (one or more standard drinks excluding for religious purposes) in the past year preceding the survey (1).

Although alcohol is consumed globally, the majority of people abstained from alcohol in the last year (12 months). Alcohol usage is influenced by factors such as sex, age, health, a nation's economic prosperity, lifestyle preferences, religion, and cultural standards. Additionally, these elements affect how alcohol is consumed. For instance, unrecorded alcohol is frequently less expensive; as a result, it may be manufactured and consumed at higher rates in low-income nations. Some nations outlaw alcohol use, which leads to low alcohol use per capita and high levels of unreported alcohol consumption, which makes up a large portion of a nation's overall alcohol consumption. Women drink less alcohol than men do globally, and they abstain from drinking more frequently than males do (1).

Several markers can be used to gauge alcohol consumption levels. One is the frequency (or quantity) of drinkers or abstainers in a nation or area. Two of the other most important and commonly used measures are total alcohol per capita consumption in litres of pure alcohol per person per year and alcohol consumption in grammes of pure alcohol per person per day. The latter measure can be estimated per capita for the drinking population or converted from the former for the overall population (1).

The alcohol consumption can be classified accordingly as: (1)

a. **Current drinkers:** the proportion (in percentages) of adults (15 years and older) in the population who have drank alcohol in the past 12 months.
b. **Total alcohol per capita consumption (APC)** is the total amount of pure alcohol consumed per capita (for example, those aged 15 years and older) throughout a calendar year, adjusted for tourist consumption (reported plus estimated unrecorded). This indicator is used in this report for the entire population of people aged 15 and older (including non-drinkers) and solely for those who are current drinkers.
c. **Grams of pure ethanol per day** is another commonly used unit of alcohol intake measurement is grammes of pure ethanol per day. This indicator is used in this report for the entire population of people

aged 15 and older (including non-drinkers) and solely for those who are currently drinking. This precaution is specifically adopted by a number of nations that have imposed restrictions on daily alcohol consumption to reduce health and damage hazards. Following is the conversion of grammes per day from litres of pure ethanol per year using the specific weight of alcohol (at 20°C) of 0.793 g/cm^3:
g/day = APC x 1000 x 0.793 / 365 days

On the other hand, adolescence is the phase of life transitioning from childhood into adulthood which it is characterized by the age group of 10 to 19 years old. It is an important stage of human development and is essential for laying the foundation for long-term health (2). Adolescence phase can be classified into three stages, which are early adolescence (approximately 10-13 years old), middle adolescence (approximately 14-17 years old) and late adolescence (approximately 18-19 years old) (3).

Along with the psychological and social changes that accompany the physical changes that herald the beginning of adolescence, these developments place this phase as a crucial stage in the development of adulthood. During the adolescent stage, external or societal changes interact with internal psychological and physical changes. The completion and negotiation of the many activities are so interrelated and reliant on one another that they must occur simultaneously. During early adolescence, young people gradually start to develop abstract thinking, which is the ability to reflect reality with internal symbols or representations. In contrast to the more simplistic concrete thinking, where items must stand in for "things" or "ideas" in order to solve problems, abstract thinking helps to consider potential outcomes and think speculatively about the future (4).

A rapid metamorphosis, such as hormonal and physiological changes of puberty, characterises the passage into adolescence. The body expands (in terms of height and weight), secondary sex traits appear, and sex hormones reach mature levels during this time. Adolescence is a period of significant neuromaturation that involves significant alterations in many different parts of the brain, such as the hippocampus, the prefrontal cortex, and the components of the limbic system. Despite the fact that the human brain reaches around 90% of its adult weight by the age of six, structural changes persist throughout adolescence. The prefrontal cortex, in particular, begins to develop early in life and continues into puberty and into the early 20s. It is crucial for executive control activities, such as planning, emotional regulation, and decision-making. In contrast, the prefrontal cortex develops later than the limbic system, which controls eating, pleasure-seeking, and reward processing. This difference in maturity between the limbic system and the prefrontal brain may account for why adolescents make more emotional and rewarding decisions than they would otherwise. Along with continuous neural system development, the adolescent brain undergoes changes that are evident in the synaptic connections between various neuronal regions. The brain is very malleable during adolescence and is changed by experience. Grey matter volume and density have been demonstrated to decrease during adolescence. The prefrontal cortex and other cortical associated areas have developmental reductions in grey matter after sensory and motor regions of the cortex. This decrease in grey matter is mostly the result of synaptic pruning, which eliminates weak or underused connections. These processes improve speed, general efficiency, and the potential for better information processing as the person develops into maturity (5).

Neurotransmission and plasticity rapidly change during adolescence. Dopamine (DA) and serotonin are two substances that are significantly impacted by these alterations. In the developing adolescence brain, both neurotransmitters are undergoing dynamic change. The adolescent brain is more susceptible than adult brain to disturbance from behaviours like binge drinking because of neurochemical, molecular, and anatomical organisation of the adolescent brain (5).

METHODOLOGY

A web-based search was conducted using search engines: PubMed, Scopus and Google Scholar to retrieve published articles and reviews on alcohol use among adolescents age group. Some references were also retrieved by manual searches. The primary search terms used were adolescents, students, alcohol use, current drinkers, sociodemographic, family environment and psychological factors (including depression, generalized anxiety and perceived stress).

The inclusion criteria were studies published in the last 10 years (2013 – 2022) and English-written articles. Articles that were unable to gain full-text access were excluded from this review. The search of databases including manual searches yielded a total of 107 articles. One researcher analysed the articles from the databases in order to assemble all relevant publications for this review. Of 107 articles retrieved, 41 studies met the inclusion criteria for our narrative literature review.

PREVALENCE OF ALCOHOL USE

Global Trend

Three million deaths worldwide are a result of alcohol abuse each year, or 5.3% of all fatalities. Drinking alcohol increases the risk of developing serious noncommunicable diseases like liver cirrhosis, some cancers, and cardiovascular diseases, as well as injuries from violence, car accidents, and collisions. These health issues include mental and behavioural disorders, including alcohol dependence (6).

The total amount of alcohol consumed per person over the age of 15 worldwide increased from 5.5 litres in 2005 to 6.4 litres in 2010 and remained at 6.4 litres in 2016. The nations in the WHO European Region have the highest alcohol consumption rates per capita. Alcohol consumption per person declined from 12.3 litres in 2005 to 9.8 litres in 2016, while it stayed relatively consistent in the WHO's African, American, and Eastern Mediterranean Regions. The WHO Western Pacific and Southeast Asia areas have shown a rise in alcohol consumption per capita. The average amount of pure alcohol used daily by current drinkers is 32.8 grammes, which is 20% higher (40.0 grammes) in the African Region and 20% lower (26.3 grammes) elsewhere. Since 2000, drinkers have increased their alcohol intake practically everywhere, with the exception of the WHO European Region. According to a recent study, the global adult per-capita alcohol consumption climbed from 5.9 litres in 1990 to 6.5 litres in 2017, and it is anticipated to reach 7.6 litres by 2030. Compared to 1990, when it was projected that 18.5% of adults drank heavily on occasion, the prevalence was 20% in 2017, and it is anticipated that it will reach 23% in 2030 (1).

Local Statistics

In Malaysia, the National Health and Morbidity Survey (NHMS) conducted in 2015 and 2019 revealed a considerable increase in the current drinker prevalence among those 18 years of age and older, which was 8.4% and 11.8%, respectively. The greatest rates of current drinkers were seen in Sarawak, Sabah, and Wilayah Persekutuan Kuala Lumpur in Malaysia (7).

Adults aged 18 and older who have ever drunk have a 14.4% prevalence, whereas those who have never drunk have an 85.6% lifetime prevalence. Men consumed much more alcohol than women among those who now drink (current drinkers), with rates of 16.9% and 6.4%, respectively. Urban areas topped the list for prevalence of current alcohol consumption (12.1%). Next in the list is the Bumiputera Sarawak (43.9%), Chinese (26.4%), Bumiputera Sabah (22.1%), and Indians (18.1%), those with tertiary education (13.7%), those in their 35s to 39s (14.7%), single adults (15.7%), and those with household incomes of RM10,000 or more (24.0%). While adults ages 18 and above had a 14.4% lifetime drinking prevalence, compared to an 85.6% lifetime abstinence prevalence (7).

Among individuals who were 13 years of age or older, the current drinkers accounted for 11.1% of prevalence, with men drinking much more than women (15.8% vs. 6.2%). The proportion of lifetime abstainers among those aged 13 and older was 86.5%, compared to 13.5% of those who had ever drank. Teenagers aged 13 and older reported drinking 11.1% of the time on average, while 88.9% reported not drinking at all in the previous 12 months. It was pointed out in the report of NHMS 2019 that Sabah has among the highest prevalence of current drinkers along Sarawak and Wilayah Persekutuan Kuala Lumpur. It is also pointed out that Bumiputera Sabah has the third-highest prevalence rate of current drinkers which accounted for 22.1% (7).

Effects of Alcohol Consumption

Adolescent drinking can be harmful to physical growth, particularly to brain growth. An important phase in a child's transition to maturity is adolescence. Their destiny may be shaped by what they learn and how they learn it during their adolescent years. Drinking alcohol during this time might cause challenges with memory, learning, and other aspects of adult life. While adolescents are drinking alcohol, some detrimental effects occur acutely, while others may not be noticeable for months or years after frequent consumption (8).

In the adolescent years, the brain undergoes significant development. Since it is still growing, alcohol affects it more severely. Alcoholism may be especially harmful to the frontal and temporal lobes, pre-frontal cortex, cerebellum, and hippocampus. For learning and memory consolidation, the hippocampus, which is buried deep inside the cerebral hemispheres, is crucial. Heavy drinking during adolescence might cause memory and learning issues as well as a decrease in hippocampus volume (8).

Depending on whether the sex is male or female, different areas of the brain develop at various rates as we grow. One illustration is the pre-frontal cortex, which contains the area of the brain responsible for rational cognition. It takes until the age of 19 for this area of the brain to start maturing, and until the ages of 21 for women and 28 for males before it is fully developed. Therefore, harm to the prefrontal cortex, while it is still developing, can have long-term impacts on a child's personality, behaviour, and memory. Teenage alcohol use has been linked to irreversible brain damage. Brain injury may be the root cause of memory issues, learning disabilities, language skill issues, alcoholism, and depression (8).

Chronic heavy drinking of alcohol can cause tolerance and withdrawal symptoms, such as seizures, as well as anxiety, drowsiness, and memory impairment. Gamma-aminobutyric acid (GABA), the primary inhibitory mechanism of the nervous system, has been related to the effects of alcohol. Alcohol enhances GABA activity in the short term, which reduces anxiety, slurred speech, drowsiness, disinhibition, and consciousness (9).

GABA's ability to operate is diminished over time and is linked to diminished sensitivity to alcohol. This implies that a person becomes more and more tolerant of the effects of alcohol. An individual's initial GABAergic functions determine the effects of alcohol use, which implies that those with lower levels are more likely to need higher levels of alcohol to achieve an effect and are therefore more likely to develop alcohol problems

than those who react more strongly to alcohol at first (10).

At the same time, alcohol inhibits the excitatory glutamatergic system. Alcohol inhibits glutamate excitation in the short term. Chronic alcohol consumption causes a compensatory increase in glutamatergic activity. This type of hyperactivity is harmful to the brain and can cause seizures and brain damage as well as withdrawal symptoms. Additionally, glutamate plays a significant role in neuroplasticity (brain growth and development) and it was hypothesised that acute and prolonged alcohol use during adolescence may disrupt connections over time, causing long-term changes in brain circuitry (11).

Even in low doses, alcohol has significant effects on the body. The type and quantity of food ingested, sex, drinking rate, and alcohol consumption all have a significant impact on how drunkenness manifests. The Blood Alcohol Concentration (BAC) is a factor in the occurrence of physiological alterations. BAC is typically represented as a percentage and stands for milligrams of alcohol per 100 millilitres of blood. For example, a BAC of 0.10 indicates that there is 1 component of alcohol in every 1000 parts of blood. The BAC level is related directly to the amount of alcohol consumed whereby the same in a single sitting increases the BAC (12).

In addition, BAC is affected by the quantity of alcohol drank, the period of time that has passed, body weight, and gender. Even at low BACs, impairments in judgement and motor coordination become noticeable. Young people who are intoxicated are more prone to ride with drunk drivers because their ability to think rationally declines as their BAC levels rise (12).

According to the US CDC, the prevalence of school-going adolescents who consume alcohol has decreased by more than half (54%) since the year of 1991. When asked if they had ever driven a car while intoxicated in the previous 30 days, one in ten high school students responded yes. When the BAC is at 0.08%, young drivers ages between 16 to 20 have 17 times more likelihood to die in a collision than when they are sober. The new limits for alcohol consumption in Malaysia are 22 micrograms in 100 ml of breath, 50 milligrams in 100 ml of blood, or 67 milligrams in 100 ml of urine (13). Unintentional injuries, mostly from car accidents, are the main cause of death for teenagers, and alcohol is a factor in 20% of all traffic incidents involving those aged 16 to 20. Because they have less experience behind the wheel, teenagers are more likely than adults to be involved in accidents, even at a lower BAC than adults. Alcohol intoxication is linked to even increased risks of traffic accidents for youth when compared to adults (13).

FACTORS ASSOCIATED WITH ALCOHOL USE

Socio-Demographic factors

(a) Age

Age is one of the factors that is frequently used in the study of alcohol use among adolescents. Older age consume alcohol more frequently (at least once in the past 30 days) in comparison to younger age (at least once in the past year). Age and alcohol use have a clear and substantial relationship, and it was reported that there is a trend for increased alcohol consumption as age grows (14). In older age group adolescents, parental control tends to be diminished, and rising independence and self-assurance may be contributing factors to a larger proclivity to drink alcohol (15).

However, younger age has a higher rate of alcohol initiation. Between the ages of 12 and 16, when young people typically start drinking, they become increasingly independent and spend more time away from home unaccompanied. At the same time, parents' direct influence wanes as friends' significance rises (16). It was found that the age when an adolescent was introduced to alcohol was before the age of 14 years. Other Southeast Asian countries also showed similar findings, whereby the majority of students in the same age group had their alcoholic drink before the age of 14 (Indonesia: 60.6%, Brunei: 57.7%). The peak of alcohol initiation was noted at 12 to 13 years old (17).

(b) Sex

Alcohol consumption globally has been a male-dominated activity as 54% of males and 32% of aged 15 and older females worldwide consume alcohol (18). Male prevalence of alcohol consumption is relatively higher (36%) as compared to females (10.8%), which is consistent with the findings in NHMS 2019 that showed alcohol consumption was significantly higher among current drinker males as compared to females (19). Findings from Malaysian school-aged adolescents

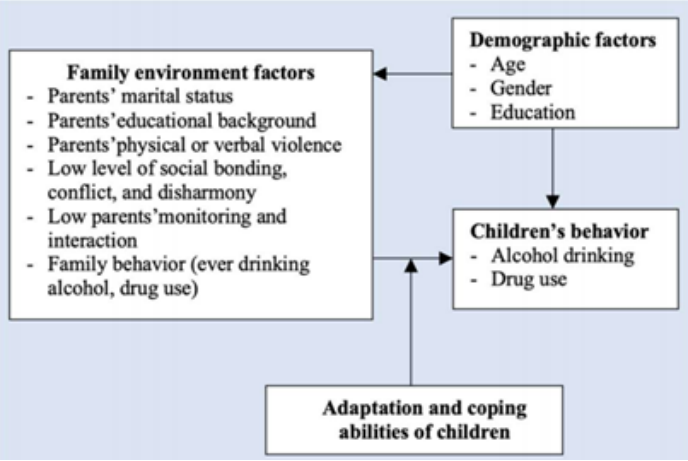

Figure 1 : Young adult alcohol use and family environment: Modified-Conceptual Model on Adaptation and Coping Abilities (Source: Jannison et al, 2016).

revealed comparable results, with males being more likely to consume alcohol than females (AOR 1.25) students (20).

In sex factors, researchers have identified that being a woman is generally a protective factor, linked to abstinence or low-risk consumption, whereas being a man is typically a risk factor, linked to consumption at higher risk (19). Although there appears to be a gender disparity in alcohol consumption, the extent of the gap varies depending on the country and the culture, ranging from a male-to-female drinking ratio of 1:1 in New Zealand and Norway to a ratio of 12.3:1 in India. Large variances between nations show that, in addition to physiologic sex differences, culturally imposed gender roles are crucial in determining gender-specific drinking practices (21).

Higher alcohol usage in males, in particular, is associated with masculine standards in social contexts (22). Men have fewer protective factors against alcohol consumption than women. Men, for example, are less likely to believe that alcohol intake is socially sanctioned. (23,24). Boys (and men) have higher rates of alcohol consumption and alcohol-related problems. However, the gender gap appears to be shrinking, particularly among girls and young women (25).

(c) Ethnicity

Alcohol consumption is generally associated with backgrounds of ethnicity and culture. Individuals of a particular ethnic background are more likely to consume more alcoholic beverages as compared to another ethnic (26). According to NHMS 2011, the Bumiputera ethnics of East Malaysia, which is the Sabah and Sarawak, had the highest odds of alcohol use and were significantly associated with risky drinking in Malaysia. This is especially relevant, particularly during festive occasions. It was found in a study that, for the ethnic group in Sabah, alcohol consumption is a way of preserving their culture and tradition. Their culture allows for alcohol consumption but discourages its abuse (27). This finding was supported by another study that explored that there is a strong wish and commitment to sustain the culture of the Bumiputera Sabah of Kadazandusun ethnicity (28).

In some villages, there has been an invasion of Western-style manufactured alcohol, and the use of alcohol has shifted from celebrations and rituals to daily use (28). Religious and cultural practices have been connected to differences in drinking by ethnicity, especially among Asian drinkers (29). As Malaysia is a Muslim country and the majority of the population is Malays, alcohol consumption in Malaysia per capita is quite low as compared to other countries. Alcohol use is uncommon among Malays, and they were the least likely to consume alcohol due to religious restrictions (30).

(d) Religion

The relationship between religious affiliation and religiosity among young believers was examined, and it was discovered that the majority of them saw great significance in their religion (the first measure of religiosity). Less Muslim and Catholic adolescents than non-believers drank alcohol, and those who had never done so scored higher on religiousness than those who had (31). The low prevalence of Muslim adolescent drinkers is highly associated with the strict Sharia rule that prohibits any Muslim from obtaining and using alcohol and alcohol-related products (32). Results, however, also indicate that Catholic adolescents are less likely than non-Catholic teenagers to use alcohol. Given that alcohol usage is not prohibited by the Catholic religion, this fact was unexpected. This may be the result of young Catholics who are extremely religious believing that their religious education discourages drinking. They might therefore adopt a prescriptive attitude, even though it is not prohibited, which raises the possibility that people won't drink. The fact that Catholics from the survey also received high marks for religiosity may be the reason for the findings (31). To completely examine religion's influence on alcohol use, a person's level of adherence to his or her religion's doctrines and practise of its beliefs should be investigated. Extrinsic (observable behavioural elements) and intrinsic (connection with a higher being or spirituality) factors may differ amongst individuals of different religious affiliations (33).

Environmental Factors

(a) Violence, never discussing problems and low bonding

A modified conceptual model of adaptation and coping with young adult alcohol use and the family environment includes family environmental elements (34). The stress and coping hypothesis of Lazarus and Folkman (1984) describes additional processes that identify risk variables for the impact of interpersonal violence on teenage alcohol intake. According to the theory, a student is

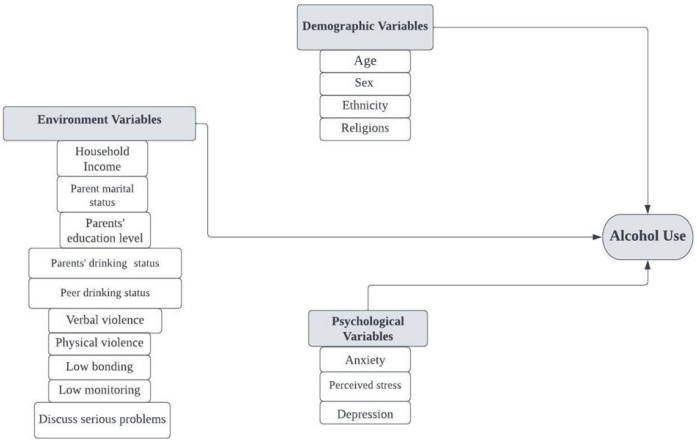

Figure 2 : Factors Interrelating with Alcohol Use

more likely to participate in dangerous activity than a student from a supportive household if they have one or both troubled parents. These environmental factors have a significant risk effect on students' risky behaviour. Alcohol and substance use are associated with verbal and physical violence, never discussing serious problems, low bonding and risky family behaviour. Students who have observed their parents' verbal and physical abuse are more prone to drink and use drugs. As a kind of self-medication, students who witness violence are more likely to experience stress and turn to alcohol (35).

Parent-child conflict is moderately associated with a drop in parental warmth and support, a drop in behavioural control and monitoring, an increase in verbal and physical reprimands, a drop in parent-child relationships, and a disproportionately high level of parental psychological control and decreased monitoring (35). Another study, however, found no association between parental bond with alcohol usage among adolescents (36). Lower levels of excessive drinking were found to be associated with higher levels of parental supervision or monitoring. More evidence indicates parental engagement as a modulator of the association between peer influence and adolescent alcoholism. higher levels of perceived parental involvement were associated with a lower association between social influences and alcohol-related difficulties (37).

The frequency with which adolescents discuss significant issues with their parents indicates the child's closeness to their parents. Parents have a tremendous influence on their children's development of attitudes, values, and lifestyle perspectives that can encourage positive outcomes in the cultural and academic realms in this situation (38). Albeit speculative, another study found that because of the intimate relationship that teenagers have with their parents, parents are more open and approving of their children's consumption of alcohol. The same argument as before for good parental bonding provided the effects of parents providing protection to their children through the process of submission (39).

(b) Parental Alcohol Use

The current study found that parental alcohol use to be a major risk factor. In the majority of nations, family is of utmost importance. As role models for children, parents and guardians have a significant influence on how much alcohol youngsters consume. Alcohol consumption among adolescents with alcohol abuser fathers was shown to be higher than among peers of the same gender and age with non-abusive fathers. It was also determined that early adolescent alcohol usage is linked to parental modeling (19). Both mothers' and fathers' alcohol consumption are significant for the risk of adolescent alcohol consumption among Norwegian adolescents, particularly in the 17-year-old age group, with increased alcohol consumption by both mothers' and fathers' increasing the likelihood of adolescent alcohol use while increasing the risk of adolescent inebriation (40).

In contrast, it was discovered in a different study that there is no correlation between parental drinking knowledge, attitude, and behaviour and adolescent alcohol consumption. The lack of a connection between parental effects and teen drinking history may be explained by traditional culture and practises (41). Findings from a systematic review concluded the lack of evidence due to inadequacy in both theoretical foundation and the ability to form causal conclusions (42).

(c) Parent marital status

One of the most widely acknowledged detrimental childhood experiences is parental divorce or separation, which has been linked to an increased incidence of drinking as well as problems in adolescence and early adulthood. The involvement of family and parents is an element that affects adolescents' psychological well-being. In general, parental marriage benefits children because of the stability of the connection between the parents who are committed to marriage, the husband and wife's financial support, and the social contract between family members (43).

The degree of adolescents' psychological well-being was found to be influenced by parental marital status, family functioning, interactions between children and parents, and communication styles (44). Hence, in the framework of adolescent development, the family's function becomes crucial, especially for psychological well-being (45). Attachment, harmony, and family functioning are some aspects of the family that influence children. As experiencing divorce or separation at any age was strongly associated with an elevated risk of drinking initiation, there was no indication of developmental specificity in terms of the time of parental divorce. There is a chance that early divorce or separation has a different risk pathway for early alcohol consumption than divorce or separation in later childhood (46). However, a different study done in Lebanon discovered that youngsters who experience parental divorce drink alcohol more frequently. Research shows that adolescents whose parents have separated or divorced are more likely to experience a hazardous alcohol disorder (HAD) (34).

(d) Household income

Higher household incomes can result in higher alcohol use. Income is a key socioeconomic factor. According to Kumar et al., the degree of alcohol use as determined by the AUDIT diagnostic instrument is highly correlated with both the male gender and the level of income. This is a result of a number of variables, including research conducted in the United States, which revealed that higher-income Americans can afford to purchase more items and frequently partake in more social activities

that may involve drinking than people from lower socioeconomic statuses. Additionally, it was found that having an economically wealthy family increases one's likelihood of engaging in dangerous behaviour (47).

According to these findings, alcohol use disorders are a serious issue that must be addressed. However, another study discovered that household income has no significant relationship with alcohol use (48). Another possibility is connected to adolescents' economic status (as judged by pocket money provided by parents) rather than parental economic status. There is a significant positive link between the risk of weekly binge drinking and the weekly income of the student: the more money available, the higher the risk (49).

Contrastingly, Among Sarawak Dayak adolescents, those who had no or little pocket money consumed alcohol, and home income had little to no effect on this behaviour. This demonstrated that socioeconomic hardship in terms of financial resources had little impact on adolescent alcohol use and that drinking alcohol can be regarded a component of lifestyle in all socioeconomic strata (50).

(e) Peer Alcohol Use

The WHO states that schools are the best places to prevent non-communicable diseases, especially through the teaching of life skills, and that they may offer children supportive, healthy environments in which to develop life skills. The WHO also recommended that teenagers work on their negotiation, refusal, and conflict-management skills so they can turn down friends' invitations to smoke or drink, which could result in a decrease in tobacco and alcohol use throughout their school careers. According to a study, peer influences on teenagers' drinking habits are substantial. Having friends who drink and peers who provide alcohol was found to be strongly associated with 'ever drinking' among adolescents (41).

Additionally, peer influences on teenagers' drinking behaviours are bigger than parental influences, and it has been discovered that the size of the link between friends' drinking behaviours and those of adolescents is greater than that of parental behaviours. When it came to taking chances and making dangerous decisions, adolescents were more prone than adults to do so when around their friends (41). Peer interactions can have a significant impact on a teen's drinking habits because the peer group usually determines the behavioural standards for the social environment. People begin to spend less time with their parents and more time with their friends when they enter adolescence (51).

Psychological Factors

(a) Perceived Stress

An individual's perception of their level of stress at a certain moment in time or over a specific period of time is referred to as perceived stress. The way a person identifies with those stressful experiences is also referred to as perceived stress. A person's perception of stress includes feelings about how unpredictable and uncontrollable their life is, how frequently they have to deal with bothersome issues, how much change is taking place in their lives, and how confident they are in their abilities to handle challenges (52).

Alcohol consumption has been linked to stressful situations and experiences. According to theory, alcohol actually lessens fear that may be connected to tension or conflict, which encourages consumption. Studies have found associations between stress and alcohol use. Heavy drinking is linked to a load of stress (53). A stressful situation's impact on someone is partly determined by the perception of their stressfulness (52). There is a comparable finding in teens, where stress and drug use (alcohol, tobacco, marijuana) are highly linked, and as age grows, both risks increase (54).

When evaluating the relationship between alcohol consumption and stress, it's critical to look at perceived stress. The degree to which people perceive their situations to be stressful is called perceived stress. While some studies have identified positive connections where more stress is linked to increased drinking, others have found negative associations where increased stress is linked to reduced drinking (53). Alcohol consumption in these people can be impacted by stress and coping mechanisms. Information on the subject came from a study that involved 1,000 participants, all of whom were seventh- and eighth-graders. To evaluate coping mechanisms in relation to use for these people, behaviour- and intention-based approaches were applied. According to the study, substance use and stress are positively correlated (54).

(b) Depression

Major depressive disorder (57% of lifetime cases) develops before alcohol use disorder, with just 2% of lifetime patients reporting the concurrent onset of depression and alcohol use disorder, supporting the notion that concurrent comorbidity is a late advanced occurrence (55). A study revealed that a model with a unidirectional link between alcohol use and major depressive disorder was the best-fitting model, but not the reverse (56). Furthermore, drinking and alcohol use disorder (AUD) may create metabolic changes that increase one's susceptibility to depression. Even if they do not have AUD, adolescents who engage in a variety of drinking behaviours may be more vulnerable to developing mood disorders since their brains are still developing and drinking alcohol when they are young puts them at a higher risk for environmental pressures (56).

Among students with mild or moderate symptoms, there was a correlation between increasing depressive symptom severity and earlier initiation of alcohol use,

increased frequency of alcohol use, and increased frequency of intoxication. The same study found that girls were more likely than boys to experience depression and early alcohol intake (57). There has been conflicting information about how gender disparities in drinking habits and depressed symptoms interact. Depression predicted alcohol consumption even after controlling for other characteristics in females but not in men, and there were stronger connections between drinking behaviour in females than in males (58).

(c) Anxiety

With regard to specific events or activities, such as work or academic achievement, the Diagnostic and Statistical Manual (DSM-5) defines anxiety as excessive worry and anxious expectations that occur more days than not for at least six months. In Malaysia, 8–12% of children and adolescents experience an anxiety disorder at some point in their lives, making it one of the most common forms of childhood psychopathology. Specific phobias, separation anxiety, and social anxiety disorder are just a few ways that anxiety can appear (59).

Despite research suggesting that anxiety decreases as children age, certain kids may experience anxiety disorders that endure until adulthood. Finding children at risk for anxiety is crucial since these illnesses can seriously affect social and other essential areas of functioning (60). A study found that higher levels of anxiety sensitivity were associated with more alcohol use days in the previous six months, and it was among youth who reported having little control over their anxiety. This result supports earlier studies that showed teenagers with high anxiety sensitivity might drink to manage their worry (61). While another study found that there's no association between lifetime alcohol use with anxiety (62).

Anxiety preceding the commencement of regular alcohol drinking and encouraging frequent usage appear to corroborate the self-medication theory (63). When compared to other anxiety disorders such as social phobia and panic disorder with agoraphobia, generalised anxiety was found to have the greatest rates of alcohol-based self-medication. Furthermore, these people were shown to be the most likely to support alcohol-only self-medication (64).

CONCLUSION

Alcohol consumption is undoubtedly a risk factor for non-communicable diseases (NCDs) and is a clear public health concern. The Global Action Plan for the Prevention and Control of Non-communicable Diseases (2013–2020) reported that the harmful use of alcohol is one of the four behavioural risk factors (tobacco use, unhealthy diet, physical inactivity, alcohol use) for three major NCDs (cardiovascular disease, cancer, chronic respiratory disease) (65).

Understanding risk factors related to alcohol use among adolescents will assist in developing effective prevention or treatment strategies, therefore reducing alcohol related diseases and enhancing quality of life. Furthermore, by educating the public and adolescents regarding the negative impact of alcohol use especially alcoholism will also aid in the effort of reducing social problems relating to alcohol use.

REFERENCES

1. WHO. Global status report on alcohol and health [Internet]. 2018 [cited 2023 Jan 22]. Available from: https://www.who.int/publications-detail-redirect/9789241565639
2. WHO. World Health Organization. 2022 [cited 2023 Apr 24]. Adolescence Health. Available from: https://www.who.int/health-topics/adolescent-health#tab=tab_1
3. Academy of Child A, Facts for Families A. Stages of Adolescent Development Stages of Adolescence Physical Development Cognitive Development Social-Emotional Development [Internet]. 2008 [cited 2023 Apr 24]. Available from: https://www.prearesourcecenter.org/sites/default/files/content/6._stages_of_adolescent_development.pdf
4. Christie D, Viner R. ABC of adolescence Adolescent development [Internet]. 2005 [cited 2023 Apr 24]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC548185/
5. Carvajal F, Lerma-Cabrera JM. Alcohol Consumption Among Adolescents — Implications for Public Health. In: Topics in Public Health. InTech; 2015.
6. WHO. WHO. 2022 [cited 2023 Jan 22]. Alcohol. Available from: https://www.who.int/news-room/fact-sheets/detail/alcohol
7. National Institutes of Health. Non-Communicable Diseases: Risk Factors and other Health Problems. 2019.
8. Victoria State Government, Department of Education and Early Childhood Development. Handbook On Adaptive Governance. Edward Elgar Publishing; 2022.
9. SCOTTISH HEALTH ACTION ON ALCOHOL PROBLEMS. Alcohol and the Developing Adolescent Brain: Evidence Review [Internet]. 2013. Available from: www.shaap.org.uk
10. Spear LP. Adolescent neurodevelopment. Vol. 52, Journal of Adolescent Health. 2013.
11. Strang NM, Chein JM, Steinberg L. The value of the dual systems model of adolescent risk-taking. Front Hum Neurosci. 2013;7.
12. Zhao X, Zhang X, Rong J. Study of the effects of alcohol on drivers and driving performance on straight road. Math Probl Eng. 2014;2014.
13. CDC. CDC. 2022 [cited 2023 Jan 22]. Underage Drinking. Available from: https://www.cdc.gov/alcohol/fact-sheets/underage-drinking.htm

14. Ontaneda Aguilar MP, Ruisoto Palomera P, López Núñez C, Torres Maroño C, Vaca Gallegos S, Pineda Cabrera NJ, et al. The Role of Age of Onset in Problematic Alcohol Consumption: Artefact or Cohort Effect? Clin Salud. 2022 Mar 1;33(1):11–7.
15. Granville-Garcia AF, Clementino MA, Gomes M da NC, Firmino RT, Ribeiro GLA, Siqueira MBLD. Alcohol consumption among adolescents: Cien Saude Colet. 2014 Jan;19(1):7–16.
16. Inchley J, World Health Organization. Regional Office for Europe. Adolescent alcohol-related behaviours : trends and inequalities in the WHO European Region, 2002-2014. World Health Organization, Regional Office for Europe; 2018.
17. AHSReportNHMS2017.
18. Kezer CA, Simonetto DA, Shah VH. Sex Differences in Alcohol Consumption and Alcohol-Associated Liver Disease. Vol. 96, Mayo Clinic Proceedings. Elsevier Ltd; 2021. p. 1006–16.
19. Htet H, Saw YM, Saw TN, Htun NMM, Mon KL, Cho SM, et al. Prevalence of alcohol consumption and its risk factors among university students: A cross-sectional study across six universities in Myanmar. PLoS One. 2020 Feb 1;15(2).
20. Manickam MA, Abdul Mutalip MHB, Abdul Hamid HAB, Kamaruddin RB, Sabtu MYB. Prevalence, comorbidities, and cofactors associated with alcohol consumption among school-going adolescents in Malaysia. Asia-Pacific journal of public health / Asia-Pacific Academic Consortium for Public Health. 2014;26(5 Suppl).
21. White AM. Gender differences in the epidemiology of alcohol use and related harms in the United States. Alcohol Res. 2019;40(2):1–13.
22. Schulte MT, Ramo D, Brown SA. Gender differences in factors influencing alcohol use and drinking progression among adolescents. Vol. 29, Clinical Psychology Review. 2009. p. 535–47.
23. Uy PJ, Massoth NA, Gottdiener WH. Rethinking male drinking: Traditional masculine ideologies, gender-role conflict, and drinking motives. Psychol Men Masc. 2014;15(2):121–8.
24. Gonzalez CA, Gallego JD, Bockting WO. Demographic Characteristics, Components of Sexuality and Gender, and Minority Stress and Their Associations to Excessive Alcohol, Cannabis, and Illicit (Noncannabis) Drug Use Among a Large Sample of Transgender People in the United States. Journal of Primary Prevention. 2017 Aug 1;38(4):419–45.
25. Grant BF, Chou SP, Saha TD, Pickering RP, Kerridge BT, Ruan WJ, et al. Prevalence of 12-month alcohol use, high-risk drinking, and DSM-IV alcohol use disorder in the United States, 2001-2002 to 2012-2013: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. JAMA Psychiatry. 2017 Sep 1;74(9):911–23.
26. Kabwama SN, Ndyanabangi S, Mutungi G, Wesonga R, Bahendeka SK, Guwatudde D. Alcohol use among adults in Uganda: findings from the countrywide non-communicable diseases risk factor cross-sectional survey. Glob Health Action. 2016 Dec 1;9(1).
27. Asong Joseph, Helen Benedict Lasimbang, Sandi James, Chua Bee Seok. Alcohol Toolkit: Empowering Sabah Indigenous Communities to Reduce AlcoholRelated Harm. Borneo Journal of Medical Sciences [Internet]. 2019 Sep [cited 2022 Nov 22]; Available from: https://jurcon.ums.edu.my/ojums/index.php/bjms/article/view/2002/1586
28. Sandi James, Sarah MacLean, Robin Room, Helen B Lasimbang, Loo Jiann Lin, Richard Chenhall. Exploring Alcohol use in Sabah, Malaysia: Preliminary results from an ethnographic study in the Kadazandusun culture. Research Gate [Internet]. 2019 Oct; Available from: https://www.researchgate.net/publication/337498509
29. Bich TH, Nga PTQ, Quang LN, Minh H van, Ng N, Juvekar S, et al. Patterns of alcohol consumption in diverse rural populations in the Asian region. Glob Health Action. 2009;2(1):28–34.
30. Mutalip MHBA, Kamarudin RB, Manickam M, Abd Hamid HAB, Saari RB. Alcohol consumption and risky drinking patterns in Malaysia: Findings from NHMS 2011. Alcohol and Alcoholism. 2014;49(5):593–9.
31. Charro Baena B, Meneses C, Caperos JM, Prieto M, Uroz J. The Role of Religion and Religiosity in Alcohol Consumption in Adolescents in Spain. J Relig Health. 2019 Oct 1;58(5):1477–87.
32. Faiz Gahamat M, Rahman M, Safii R. Prevalence and Factors Associated with Alcohol Use among Dayak Adolescents in Sarawak, Malaysia. Malaysian Journal of Medicine and Health Sciences. 2023;19(1):215–23.
33. Charro Baena B, Meneses C, Caperos JM, Prieto M, Uroz J. The Role of Religion and Religiosity in Alcohol Consumption in Adolescents in Spain. Vol. 123, Journal of Religion and Health. 2019.
34. Jennison KM. The impact of parental alcohol misuse and family environment on young people's alcohol use and behavioral problems in secondary schools. J Subst Use. 2014 Mar 8;19(1–2):206–12.
35. Romadlona NA, Utomo B, Sucahya PK, Kurnia Sucahya P. Family Environment Factors: Alcohol and Drug Misuse among Indonesian Students: Indonesia National Narcotics Survey of Students Output project View project Natinal Cooking Oil Fortification with Vitamin A View project Family Environment Factors in Alcohol and Drug Misuse among Indonesian Students: Indonesia National Narcotics Sur-vey of Students. 2021; Available from: www.preprints.org
36. Smorti M, Guarnieri S. The parental bond and alcohol use among adolescents: The mediating role of drinking motives. Subst Use Misuse. 2015 Oct 15;50(12):1560–70.
37. Wood MD, Read JP, Mitchell RE, Brand NH. Do

Parents Still Matter? Parent and Peer Influences on Alcohol Involvement Among Recent High School Graduates. Psychology of Addictive Behaviors. 2004 Mar;18(1):19–30.
38. Clark TT, Nguyen AB. Family Factors and Mediators of Substance Use Among African American Adolescents. Sage Journals. 2012;
39. Chakroun-Baggioni N, Izaute M, Fall E. Gender, attachment, and parenting style: Protective or risk factors of alcohol misuse in young adults? HAL [Internet]. 2021; Available from: https://hal.science/hal-03223665
40. Berglund KJ, Boson K, Wennberg P, Gerdner A. Impacts of alcohol consumption by mothers and fathers, parental monitoring, adolescent disclosure and novelty-seeking behaviour on the likelihood of alcohol use and inebriation among adolescents. Int J Adolesc Youth. 2022;27(1):582–96.
41. Nakaseko E, Kotera S, Nakazawa M. Factors associated with smoking and drinking among early adolescents in vanuatu: A cross-sectional study of adolescents and their parents. Int J Environ Res Public Health. 2020 Nov 2;17(22):1–18.
42. Rossow I, Keating P, Felix L, Mccambridge J. Does parental drinking influence children's drinking? A systematic review of prospective cohort studies. Addiction. 2016 Feb 1;111(2):204–17.
43. David C Ribar. Why Marriage Matters for Child Wellbeing. Future Child. 2015;11–27.
44. Shek D, Li L. Development of Delinquent Behavior in Early Adolescents in Hong Kong. 2014;
45. Keresteš G, Brković I, Kuterovac Jagodić G. Predictors of Psychological Well-Being of Adolescents' Parents. J Happiness Stud. 2012 Dec;13(6):1073–89.
46. Jackson KM, Rogers ML, Sartor CE. Parental Divorce and Initiation of Alcohol Use in Early Adolescence. Psychology of Addictive Behaviors. 2016 Jun 1;30(4):450–61.
47. Moure-Rodríguez L, Piñeiro M, Varela MC, Rodríguez-Holguín S, Cadaveira F, Caamaño-Isorna F. Identifying predictors and prevalence of alcohol consumption among university students: Nine years of follow-up. PLoS One. 2016 Nov 1;11(11).
48. Probst C, Kilian C, Sanchez S, Lange S, Rehm J. The role of alcohol use and drinking patterns in socioeconomic inequalities in mortality: a systematic review. Lancet Public Health. 2020 Jun 1;5(6):e324–32.
49. Bosque-Prous M, Kuipers MAG, Espelt A, Richter M, Rimpelä A, Perelman J, et al. Adolescent alcohol use and parental and adolescent socioeconomic position in six European cities. BMC Public Health. 2017 Aug 8;17(1).
50. Faiz Gahamat M, Rahman M, Safii R. Prevalence and Factors Associated with Alcohol Use among Dayak Adolescents in Sarawak, Malaysia. Malaysian Journal of Medicine and Health Sciences. 2023;19(1):215–23.
51. Sellers CM, O'Brien KHM, Hernandez L, Spirito A. Adolescent alcohol use: The effects of parental knowledge, peer substance use, and peer tolerance of use. J Soc Social Work Res. 2018 Mar 1;9(1):69–87.
52. Stoliker B, Lafreniere K. The Influence of Perceived Stress, Loneliness, and Learning Burnout on University Students' Educational Experience [Internet]. 2015. Available from: https://www.researchgate.net/publication/282817514
53. Brooks-Russell A, Simons-Morton B, Haynie D, Farhat T, Wang J. Longitudinal Relationship Between Drinking with Peers, Descriptive Norms, and Adolescent Alcohol Use. Prevention Science. 2014;15(4):497–505.
54. Wills TA, Sandy JM, Yaeger AM, Cleary SD, Shinar O. Coping dimensions, life stress, and adolescent substance use: A latent growth analysis. Journal of Abnormal Psychology . 2001;
55. Brière FN, Rohde P, Seeley JR, Klein D, Lewinsohn PM. Comorbidity between major depression and alcohol use disorder from adolescence to adulthood. Compr Psychiatry. 2014;55(3):526–33.
56. Pedrelli P, Shapero B, Archibald A, Dale C. Alcohol use and Depression During Adolescence and Young Adulthood: a Summary and Interpretation of Mixed Findings. Vol. 3, Current Addiction Reports. Springer; 2016. p. 91–7.
57. Johannessen EL, Andersson HW, Bjørngaard JH, Pape K. Anxiety and depression symptoms and alcohol use among adolescents - a cross sectional study of Norwegian secondary school students. BMC Public Health. 2017 May 23;17(1).
58. Skogen JC, Sivertsen B, Lundervold. Astri J, Stormark KM, Jakobsen R, Hysing M. Alcohol and drug use among adolescents: and the co-occurrence of mental health problems. Ung@hordaland, a populationbased study. BMJ Journals [Internet]. 2014 [cited 2023 Apr 25]; Available from: https://bmjopen.bmj.com/content/bmjopen/4/9/e005357.full.pdf
59. Ang CS. Anxiety in malaysian children and adolescents: Validation of the screen for child anxiety related emotional disorders (SCARED). Trends Psychiatry Psychother. 2020 Jan 1;42(1):7–15.
60. Langley AK, Falk A, Peris T, Wiley JF, Kendall PC, Ginsburg G, et al. The Child Anxiety Impact Scale: Examining Parent- and Child-Reported Impairment in Child Anxiety Disorders. Journal of Clinical Child and Adolescent Psychology. 2014;43(4):579–91.
61. Kearns NT, Villarreal D, Cloutier RM, Baxley C, Carey C, Blumenthal H. Perceived Control of Anxiety as a Moderator in the Relationship between Anxiety Sensitivity and Problematic Alcohol Use among Adolescents. 2017.
62. de Abreu Costa M, Salum GA, Isolan LR, Acosta JR, Jarros RB, Blaya C, et al. Association between

anxiety symptoms and problematic alcohol use in adolescents. Vol. 35, Trends Psychiatry Psychother. 2013.

63. Gilman JM, Ramchandani VA, Davis MB, Bjork JM, Hommer DW. Why we like to drink: A functional magnetic resonance imaging study of the rewarding and anxiolytic effects of alcohol. Journal of Neuroscience. 2008 Apr 30;28(18):4583–91.
64. Smith JP, Randall CL. Anxiety and Alcohol Use Disorders Comorbidity and Treatment Considerations Prevalence and Clinical Impact of Comorbid Anxiety and AUDs [Internet]. 2012 [cited 2023 Jun 19]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3860396/pdf/arcr-34-4-414.pdf
65. World Health Organization. Global action plan for the prevention and control of noncommunicable diseases, 2013-2020. [Internet]. World Health Organization; 2013 [cited 2023 May 10]. 103 p. Available from: https://www.who.int/publications/i/item/9789241506236