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**Editorial: Bioethical Issues around the Globe**

This first issue of volume 23 includes a series of papers on health care ethics from around the globe, exploring some of the similarities faced by patients, doctors, and citizens in countries such as Australia, Brazil, Iran, Japan, Mexico and Nigeria. One of the basic questions of bioethics is about decision making. Cerdán et al., conducted a survey in Mexico of who decides? The role of the family in the informed decision in Mexican cancer patients. Oluwaseun Adeola Adenugba from Nigeria discusses the Epistemological Importance of Informed Consent in Clinical Research, and the rationale can be applied to any country and community. The case presented could also be seen in many countries of Asia-Pacific, and every other continent.

Atsushi Asai and Kenji Miki present a case study concerning privacy in the care of patients with HIV in Japan. Breach of privacy of patients is a form of malpractice and should be sanctioned. Medical malpractice: analysis of professional ethical processes in Paraíba, Brazil by Maria de Fátima Oliveira dos Santos et al. reports on the way that such breaches of good practice are regulated in Brazil. Nader Ghotbi describes ambiguity in the fatwahs that people follow in Iran, and affects the ethics of reproductive medicine in the Islamic Republic of Iran. Having many different sources of authority provides flexibility to patients with different decisions, but some would claim it is difficult to regulate. How far should we allow the exercise of informed decision making in societies so that people can have a child?

The premise of education also hopes that learners will be in a good state to learn. Susannah Tye, Wilhelmina van Rooy and Irina Pollard surveyed students in Australia and in their paper “Drug and Alcohol Use, Sexual Intimacy and Associated Health Status of Senior High School Students: Implications for Learning and Studying” they find that a number of students may not be in a good state to study, nor make good decisions even if they had learnt the basics of decision making.

Annaswamy Nalini from India emphasizes the importance of humanism in medicine, and considers this as the main premise for rethinking medical ethics education. Medical education is important for health care workers to be able to relate properly to patients and provide informed consent.

We hope that scholars and policy makers from around the world will join the 14th Asian Bioethics Conference: Ethics in Emerging Technologies to Make Lives Better Together, which is also the 7th UNESCO Asia-Pacific School of Ethics Roundtable. It will be held during 19-23 November 2013 in Chennai, India, and for those who have not been to Southern India before, there are also plenty of smaller towns and countryside that can be visited before or after the conference. The 14th Asian Bioethics Conference 2013 will be hosted by the All India Association of Bioethics (AIBA) in collaboration with Loyola Institute of Frontier Energy (LIFE), Loyola College and Loyola-ICAM College of Engineering and Technology (LICET), Loyola Campus.

Please renew your Asian Bioethics Association subscriptions for 2013! New articles are welcome from around the world.

– Darryl Macer
many religious, social and cultural customs and norms that are shared.

Acknowledgements
This research has been supported by a grant from the Japanese Ministry of Higher Education, Culture, Sports, Science & Technology (MEXT), and supervised by Professor Takao Takahashi, Graduate School of Social and Cultural Sciences, Kumamoto University. I would like to especially thank Professor Takahashi as well as Professor Darryl Macer, Research Advisor, UNESCO Bangkok, for the hard and diligent work of organizing and facilitating the associated research activities.

References
Introduction

Lifestyles and attitudes of young people is, increasingly, a significant component of current research when studying ways that genetic and epigenetic (that is, all the environmental variables which modulate gene activity) influence personal development, behavioural habits and social outlook. Social learning, where members of a particular group learn constructive ways to think and behave from others play a key role in safeguarding general health and wellbeing. Formal schooling as a social construct for learning is one such example. For many young people, their social interactions with parents, teachers and peers, and now via online social networking sites, shape and mediate their beliefs, views and attitudes towards all facets of their health and wellbeing.

Good health, far from being a natural state or universal right, is a matter of achievement, a consequence of privilege or good luck even. It is for this reason that health is defined in the Constitution of the World Health Organization (WHO) as being a state of ‘complete physical, mental and social wellbeing, not merely the absence of disease or infirmity’. This definition emphasizes succinctly the positive aspects of a fully realized genetic potential where good health can be seen as the result of a positive environment supported by socioeconomic advantage. Adolescents are particularly vulnerable to socio-environmental influences during their critical phases of accelerated growth and intellectual development and are, therefore, physiologically and behaviorally more susceptible to changing demands with potential health consequences. It is well acknowledged that risky lifestyle choices and habits in adolescence may adversely influence coping abilities that ameliorate anxiety, depression, social isolation, sexual intimacy and prevalence of drug and alcohol consumption. Schools, as places of social capital, play a key role in educating students about these matters in a positive, supportive and informed learning environment. They are well placed to engage students in meta-cognition about learning, health and wellbeing.

Early adverse social environments such as abuse and neglect have been associated with a wide range of negative outcomes, including increased risk of a variety of mental disorders, substance abuse and tobacco dependence. Importanty, lifestyle choices and patterns of psychological processing interact to influence a young person's quality of overall health with diet, exercise, substance use, teenage pregnancies, optimism and problem solving ability all being good predictors of overall physical and mental health. Accordingly, the aim of this study was to focus our attention on lifestyle choices currently being made by senior high school students living in the inner city and surrounding suburbs of Sydney, Australia. By means of a structured questionnaire we identified key findings connecting drug and alcohol use, health and resilience by gender and country of birth, frequency of drug and alcohol use associated with intimacy and/or sexual experience, and the use of contraception. By targeting these interrelated behavioural patterns, we aim to advance senior high school educational delivery and youth accountability in important matters relating to lifestyle, health and general wellbeing.

Methods

Participants and Descriptive of Student Questionnaire

The participants recruited were a sectional sample of senior high school students aged 15-17 years of age (16.4±0.81 SE) living in the inner city and surrounding metropolitan areas in Sydney, Australia. A multimodal questionnaire (text, diagrams, tables and cartoons) was administrated to 440 students from seven schools. This form of questionnaire was chosen as opposed to a text only questionnaire because of the academic and ethnic diversity of the student group. Doing so ensured that questions were accessible to most students and reliable answers to questions could be obtained. Student response to the questions was optional. Prior to implementation of the questionnaire, feedback was obtained from several experienced high school science and literacy teachers and students.

Students in this age cohort (Year 11) were in their 12th year of schooling and other than English and Mathematics, had studied two compulsory subjects until the end of Year 10, namely, science (all four disciplines) and personal development, health and physical education (PDHPE). Both subjects were no longer compulsory in the final two years of high school (Year 11 – 12). In previous years students had undertaken science studies in human physiology including reproduction and in health studies including psychological and emotional health.

Statistical Analysis

Data from all questionnaires was analyzed by means of a combination of statistical methods. All analyses were performed using SPSS version 16.0. Because each student gave multiple listings of variable questioned, a single value for analysis was established. The number of different effects was counted and this score was used for each of the following descriptive analyses. Friedman's test two-way analyses of variance by ranks and Bonferroni corrections were initially carried out to determine if the number of responses by students was consistent across all variables. Pearson's Chi-square univariate analyses were undertaken to examine relationships between categorical outcome and independent study variables. Furthermore, the non-parametric Wilcoxon pair-wise comparisons test was performed to determine univariate associations between continuous and categorical variables and was used to assess two variables at a time; for example student's own health, wellbeing and stress ratings on 1-10 scales. Non-parametric tests, including standard correlations, were more appropriate in the current study because the gathered data was not normally distributed. Multivariate regression analyses and elimination procedure variables to p<0.05 were also carried out.

Results
Six focus areas were identified from the questionnaire data.

**Focus 1: Drug Use**

Table 1 presents the overall incidence of drug use for tobacco, alcohol and illegal drugs. As can be seen 68% of respondents have never tried tobacco while, 10% smoked daily. 23% of respondents have never tried alcohol, 19% were drinking weekly, 22% monthly, 3% daily. 76% of respondents have never tried marijuana, 8% were using it weekly or daily. 91% of respondents have never tried ecstasy but 5% were using regularly on a monthly, weekly or daily basis. 90% of respondents have never tried amphetamine while 5% were using regularly on a monthly, weekly or daily basis. A significantly (p<0.001) higher use of ecstasy and amphetamine on monthly, weekly or daily bases was noted from students who identified themselves as coming from Middle Eastern backgrounds. This disturbing observation, however, is in serious doubt on account of smaller sample size and the str

No significant gender differences were found in the pattern of drug consumption where boys and girls alike smoke and consume alcohol/drugs in comparable frequency. Figure 1 illustrates reasons given for drug use. As can be seen from Figure 1, the strongest motives for drug consumption are enjoyment (25%) and peer pressure (27%). On the other end of the scale, it is for drug consumption are enjoyment (25%) and peer pressure (27%). On the other end of the scale, it is

Figure 1 illustrates reasons given for drug use. As can be seen from Figure 1, the strongest motives for drug consumption are enjoyment (25%) and peer pressure (27%). On the other end of the scale, it is

![Figure 1: Reasons for drug use among senior high school students 15-17 years old (n=307)](image)

**Focus 2: Diet and Drug Use**

Overall in females there is a significant inverse relationship between alcohol, amphetamine, ecstasy, tobacco, but not marijuana, use and poor diet scores (see below). It is not possible to ascertain whether the drug use resulted in poor diet or whether both co-exist. Of the 152 girls who responded, analysis showed an inverse relationship between drug use scores and a poor diet – tobacco use (p<0.03), alcohol (p<0.02), ecstasy (p<0.03) and amphetamine (p<0.02).

No significant relationship between diet score and drug consumption in males was found, although p-values of 0.1 and 0.2 suggest a possible non-significant trend in this direction. It is possible that males are partially protected from adverse diet effects owing to their higher exercise levels compared to girls.

Essential physiological relationships also exist between obesity and poor exercise levels. The traditional view that overweight and obesity is exclusively the result of over-indulgence in energy-dense, nutrient-poor foods with high levels of sugar and saturated fats is widespread. This is not necessarily the case promoting an urgent need to raise awareness about the multidisciplinary origins of this condition.

**Focus 3: Drug Use and Health/Wellbeing Ratings**

Overall there is a highly significant correlation (p<0.001) among low self-assessed health/happiness scores, high stress levels and drug use for both male and female students. Specifically, feelings of low health/wellbeing and drug use are highly significant for alcohol, marijuana and tobacco in both males and females. Happiness did not score but there is a correlation between ecstasy (male), marijuana and tobacco (female) and stress. It is not possible to unearth the order of appearance; whether drug use causes low self-assessed health/happiness or vice versa. Disturbingly, however, 16-17 year-olds seem to have access to a thorough range of legal and illegal drugs. Consumption is widespread despite precautionary information freely available online from reputable government and NGO sites along with blogs, Tweets and Facebook.

Relationships between drug use and self-assessed health/happiness and stress scores (number of respondents/group) are identified below:

**Health**: Significantly poorer health ratings were found with increased drug use for tobacco (males p<0.001 – 156; females p<0.001 – 151), alcohol (male p<0.05 – 155; female p<0.004 – 152), and marijuana (male p<0.001 – 155; female p<0.02 – 152). Low p-values for amphetamine and ecstasy (p<0.1; p<0.3) suggest a similar, but non-significant trend for these drugs for both genders.

**Happiness**: Increased marijuana use occurred in more “unhappy” males (p<0.05 – 155), and increased smoking occurred in more “unhappy” females (p<0.10 – 151). No relationship between happiness and marijuana use in females or happiness and smoking in males was found.

**Stress**: High ratings of general everyday stress levels and drug use were significant for marijuana and ecstasy use in males (p<0.03 – 155; p<0.05 – 151) respectively; and greater tobacco use (p<0.02 – 151) in stressed females. A non-significant trend was observed between high ratings of general everyday stress levels and drug use for marijuana use in females (p = 0.067) and remaining drugs (p = 0.105-0.249).

Table 1: Frequency of drug use among senior high school students 15-17 years old

<table>
<thead>
<tr>
<th>Variable</th>
<th>% Incidence</th>
<th>Number Respondents / group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
<td>Rarely</td>
</tr>
<tr>
<td>Tobacco</td>
<td>68</td>
<td>15</td>
</tr>
<tr>
<td>Alcohol</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>Marijuana</td>
<td>76</td>
<td>11</td>
</tr>
<tr>
<td>Ecstasy</td>
<td>91</td>
<td>4</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>90</td>
<td>5</td>
</tr>
</tbody>
</table>
Focus 4: Drug Use vs. Health/Wellbeing by Country of Birth

Overall low ratings of health and wellbeing/happiness were significantly correlated with drug consumption behaviour regardless of country of birth (as indicated by participants).

Health: Australia and New Zealand - tobacco (p<0.001), alcohol (p<0.02), marijuana (p<0.001), ecstasy (p<0.003) and amphetamine (p<0.02); Americas (US/Canada/S America) - tobacco (p<0.01), marijuana (p<0.01); Micronesia/Malaysia - tobacco (p<0.003).

Happiness: Australia and New Zealand - tobacco (p<0.001), alcohol (p<0.02), marijuana (p<0.005) and ecstasy (p<0.003); Americas (US/Canada/S America) - tobacco (p<0.01), alcohol (p<0.01), marijuana (p<0.01), ecstasy (p<0.01); and amphetamine (p<0.01); Europe - tobacco (p = 0.461), alcohol (p<0.01), marijuana (p<0.05); Africa - tobacco (p<0.01).

Stress: Australia and New Zealand - tobacco (p<0.004), alcohol (p<0.02), marijuana (p<0.005) and ecstasy (p<0.003); Americas (US/Canada/S America) - tobacco (p<0.01), alcohol (p<0.01), marijuana (p<0.01), ecstasy (p<0.01); and amphetamine (p<0.01); Europe - tobacco (p<0.001), alcohol (p<0.01), marijuana (p<0.05); Africa - tobacco (p<0.01).

Strong negative correlations between drug use and low health ratings was also indicated for other countries but these categories, having fewer than 20 respondents per cohort, are not listed. On the whole, however, cultural variation was found to be low.

The majority of students were aware that amphetamine (p<0.03 – 111), ecstasy (p<0.07 – 111) and marijuana (p<0.04 – 111) use have both short- and long-term negative health effects but consumed regardless. Interestingly, the drug that students responded with the lowest number of short-term health effects was nicotine but they did catalog long-term negative health effects highest for both nicotine and alcohol – even acknowledging that smoking significantly (p<0.05 – 149) accentuated the short-term effects of all other drugs consumed. Consequently, it is apparent that a majority of students are well aware that drug-consuming behaviours significantly reduce their health and wellbeing but choose to disregard this knowledge.

Focus 5: Frequency of Drug Use, Intimacy and Sexual Activity

A significantly (p<0.001) greater frequency of alcohol use was seen in both male and female participants who had been intimate with or without sexual activity (Figures 2 & 3). This relationship is also present in those who have had just sex excluding intimacy.

Likewise, there was a significantly greater frequency of marijuana use in males and females who have been intimate (p<0.005 males, p<0.004 females). There was also a significantly greater frequency of marijuana use and sexual activity excluding intimacy in males and females (p<0.002 males, p<0.001 females) as was the frequency of tobacco use in males and females who have been intimate (p<0.004 males, p<0.01 females) and who have had sex (p<0.01 males and p<0.001 females).

Figure 3: Frequency of alcohol use and intimacy amongst female senior high school students 15-17 years old

There was no significant relationship between amphetamine use and intimacy in either male or females, but was significant for sexual activity (p<0.04 for males and p<0.03 for females). As far as ecstasy was concerned, no significant relationship was observed in males and females with intimacy or sexual activity in either males or females.

Drug taking did not correlate with the number of sexual partners in males or females. What was of consequence, however, was the significantly lower happiness (p<0.002) and satisfaction (p<0.03) ratings reported in girls who had sexual intercourse compared with those who had not. There was also a non-significant (p=0.167) trend towards higher stress ratings in girls with sexual experience. No such correlations were found in boys.

Figure 4: Intimacy and sexual experience by region of birth (n=319)

It seems that students are well acquainted with sexuality and have wide experience on the whole with several partners before age 17 as disclosed in the data.
Of interest is that sexual experience and drug use is correlated i.e. sex and drugs are linked in the lifestyle of senior high school students aged 15-17 years. However, no significant correlation was found between students' awareness of what they may do to maximize their mental health and wellbeing and the number of sexual partners.

**Focus 6: General Awareness of Contraception – whose responsibility is safe-sex precautions?**

Overwhelmingly the condom (30% for boys, 28% for girls) and the condom combined with the oral contraceptive pill (22% for boys, 19% for girls) were considered the most effective contraception method by gender and region of birth. The contraceptive pill was not considered as effective as the condom or its combination with a condom (2% for both boys and girls). Abstinence and the female diaphragm were considered by less than 1% of all students to be effective.

Most male and female respondents were of the opinion that the responsibility for ensuring safe-sex precautions lay with both partners (42% for boys, 43% for girls), themselves alone (8% for boys, 4% for girls); their partner (1% for both boys and girls) and for neither (less than 1% for boys and girls) – all independent of region of birth.

**Discussion**

Structured questionnaire data provided by senior high school students 15-17 years of age living in the inner city and surrounding suburbs of Sydney (Australia), was examined from the perspectives of lifestyle choices, health/wellbeing ratings and sexual experience. Male and female respondents have ready access to tobacco, alcohol and a variety of illegal drugs. The strongest motives for drug consumption were enjoyment and peer pressure, although addiction, anxiety, depression and a desire to 'forget problems' were also given as reasons for their drug use. There were no gender differences in type of drug chosen and frequency of consumption; although, a significant inverse relationship between tobacco, alcohol and illegal drug use and poor diet scores in female students was identified. No such relationship existed between diet score and drug consumption in male students. Notably, the data also revealed a highly significant correlation between low self-assessed health/happiness scores, high stress levels and alcohol, tobacco and marijuana use for both boys and girls. The strong inverse correlation between health/wellbeing, stress, happiness ratings and tobacco, alcohol and illegal drug use held regardless of country of birth. Concurrently, the majority of students were well aware of the short- and long-term negative health effects of their drug-consuming behaviour but indulged despite the consequences.

Our questionnaires also established that many Australian students would seem to be well acquainted with sexuality and have, on the whole, wide experience with several partners before age 17. A significant correlation between adolescent sexual experience and augmented drug use was found in both male and female respondents; however, the self-assessed happiness/satisfaction ratings in girls who had sexual intercourse was significantly lower compared with those who had not. No such correlation was found in boys; thus, in point of fact, paralleling the inverse relationship between drug taking behaviour and low health ratings in female students. Encouragingly, however, was that an overwhelming majority of respondents considered that the condom and the condom combined with the oral contraceptive pill to be the most effective contraception method. Equally the students were also of the opinion that the responsibility for ensuring safe-sex precautions lies with both partners. These findings held true for gender and region of birth.

Issues of drug use and sexual experience as they adversely relate to health and wellbeing in the young are major public health concerns and, disturbingly, 15-17 year-old Australian youth have ready access to a whole range of legal and illegal drugs. The issue that adolescent sexual experience and heightened substance use are significantly interrelated is not surprising and is supported by similar reports from; for example, Canada and the United Kingdom. However, the present study identifies important gender associations between drug and sex behaviours and low health/happiness ratings in adolescent girls but not in adolescent boys. These observations are critical and require more in-depth investigation.

Poulin et al reported a series of complex interacting factors among gender, substance use and age that can increase the risk of depressive symptoms in the general adolescent school population. Among males, depression risk was not related to age; among females, depression risk was related to age in a non-linear manner peaking at 15-16 years of age. Further, age and associated depression risk was significantly related to the pattern of drug use where younger female adolescents are at greater risk compared with older adolescents. There is mounting evidence supporting the forewarning signs that, on average, girls are maturing years earlier when compared with the 1950s to 1970s, predominantly, it is thought, due to improvements in nutrition. Understandably, the younger the girls experiencing puberty the more immediate the risk of becoming isolated and perhaps depressed, stimulating the decision to start smoking, become sexually active or become interested in other drugs carrying serious health consequences. However, the order of appearance is not possible to ascertain; whether drug use causes low self-assessed health/happiness ratings or low rating encourages drug seeking behaviour. In the final analysis, health and ill-health are dependent on the conditions under which we live and the ways in which we behave. Of particular concern is that addiction and depression may well impair a young person’s competence to make informed rational choices such as whether to partake, or not, of certain recreational drugs or whether to enter the adult world of sexuality.

The links between adolescence, drug intake and sexual experience can be described in a variety of ways but they are, essentially, biological in nature. Puberty is a gradual and complex period in an individual's life during which adolescents reach sexual maturity and full reproductive potential. The onset of puberty in a girl occurs around ten years of age when her previously-dormant hypothalamic-pituitary-gonadal (HPG) axis is activated stimulating accelerated growth and development of the secondary sexual characteristics. The period of adolescence, as the individual passes through differing stages of development, is experienced as a changing kaleidoscope
of physical, cognitive, emotional and social capacities. In essence, adolescence is the period of life that takes on special characteristics where each and every aspect of being is impacted, where habits formed may promote or hinder ongoing personal development. Indeed, for many individuals, puberty ushers in profound changes in patterns of risk taking relating to health. It is a time when many individuals will first experiment with substances such as alcohol, cigarettes and marijuana.

As indicated above, varying statistics from differing sources have shown that the age at which girls reach puberty and undergo menarche (first menstruation) has decreased significantly and that precocious puberty in girls appears to be 5 times more likely compared to boys. The early onset of secondary sexual characteristics such as breast buds and pubic hair is fuelling a growing fear that early maturity, lack of experience of drug use and its effects, and increased engagement in teenage sexual intercourse may generate the beginning of long-term ill-health. Precocious puberty is defined as “the appearance of secondary sexual characteristics in girls under 8 years and in boys under 9 years of age, the presence of menarche for girls under 9 years of age indicates sexual precocitiy”. Early engagement in sexual activity as a result of early puberty has both biological and psychosocial grounding. Biologically, rises in hormones such as DHEA (dehydroepiandrosterone), testosterone and estradiol; which are all released at high levels during puberty, are involved in establishing feelings of sexual attraction.

Additionally the physical changes of the body, such as the development of the breasts and fat deposition on the hips make these young girls more attractive to males, and consequently a sexually mature female appearance results in attraction from more sexually mature males. The age at which precocious puberty occurs varies with heredity and ethnicity but it is an increasingly worldwide phenomenon regardless of heredity and ethnicity. Australian teenagers form a transnational, multi-ethnic group with differing backgrounds; thus, the mixing of genetic factors and ethnicity may in future become a major indicator of precocious puberty among Australian girls.

For the meantime, parents globally are expressing their concern whether the combination of early development in girls’ physical appearance combined with teenager sex being freely portrayed through the media, may push the faster maturing girls to embrace risk taking behaviour in alcohol/drug consumption with sexual intercourse before they are cognitively and psychologically ready. For example, the popular Hollywood movie ‘American Pie’ was received favourably by young viewers worldwide. Images and signs across all media platforms provide mixed messages to girls about the right way to pursue ones sexuality or more generally, what is considered normal. It has been reported that girls who matured earlier showed greater interest, compared to later maturing girls, in seeing sexual content in movies, television, and magazines, and in listening to sexual content in music, regardless of chronological age or ethnicity. Exposure to sexualized media would no doubt influence a young girl’s view of herself, her surroundings and give her education about lifestyle choices that can be made at a stage when emotional and cognitive capabilities to make serious, informed decisions are not fully developed.

Another confirming study by Skinner et al. showed that Australian adolescents who are physically and emotionally ‘ready’ to engage in sexual intercourse are more likely to postpone the experience until they are comfortable with the partner and their relationship. Personal control is reported as one of the reasons for delaying intercourse. The survey also noted that peer pressure, specific coercion from sexual partners, and being intoxicated were the main reasons for premature and unwanted sexual intercourse. Therefore, greater physiological and psychological insights linking early onset of puberty to sexual intercourse and substance abuse is essential within a more holistic context of social and/or environmental factors that may contribute to a sub-group of adolescents running higher lifestyle risks compared with their peers. It has been reported that girls who have gone through puberty early are twice as likely to have been pregnant or aborted a pregnancy at the age of eighteen, compared with their peers.

Substance use and abuse is influenced through the brain’s dopamine reward pathway. Sexual activity also influences the dopamine reward pathway and both can lead to addictive and promiscuous behaviour. Dopamine is a neurotransmitter of the brain that generates the subjective feeling of pleasure or happiness and for this reason has been dubbed the ‘courier of addiction’. All drugs that are addictive activate the dopamine cells of the ventral tegmental area to enhance the amount of dopamine that is released in the nucleus acumbens; for example, alcohol stimulates the nucleus acumbens increasing amiability and attractiveness in social settings, and ecstasy stimulates euphoric feelings as its earthy term ‘the love drug’ implies. More recent research has established that dopamine is also the messenger that appears to operate in excess during adolescence. By the strategic use of functional magnetic resonance imaging (fMRI) in conjunction with reward paradigms, it is now possible to substantiate the hypothesis that the dopamine system is hyper-responsive during adolescence, establishing that adolescence is the developmental period characterized by increased reward-seeking behaviour. Heightened stress such as occurs in individuals experiencing precocious puberty, may carry other significant consequences relating to reward-seeking behaviours. Increased concentration of the stress hormone cortisol speed up the responsiveness of the dopamine reward system; thus, further enhancing the cycle of reward-seeking behaviour.

The causes of precocious puberty have been fiercely debated, with the most accepted grounds for such early development linked to diet components and obesity, genetic growth disorders related to hormones, chemical pollution in the food chain and hormonally-active chemical contaminants present in the environment. Other theories suggest exposure to unrelated male pheromones and father absenteeism, constant societal demands, and sexualized image bombardment could possibly be triggering changes in the brain’s chemistry accelerating developmental change toward sexual maturity. All of the above theories carry existing evidence, but differing levels of definitive proof. As a

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2 The film concentrates on four boys who make a pact to lose their virginity before their high school graduation.
relatively new phenomenon, a low percentage of infants who were conceived by assisted reproductive technology (ART) are also showing signs of precocious puberty23 possibly due to their prenatal exposure to exogenous sex steroids; thus, increasing awareness that an artificially altered intrauterine environment may impact on developmental stages in children conceived by ART. Long-term data and a safe threshold for estrogen use are yet to be determined.

Controversy as to which theory best fits atypical maturation aside; the evidence for its existence is solid, as is the heightened emotional-behavioural problems experienced by early maturing adolescents and young adults. Therefore, the question could possibly be asked ‘Is it time for our perceptions of normality to change?’ Currently, young girls experiencing precocious puberty at an awkward age face difficulties to define their place in their immediate surroundings. A more pragmatic acknowledgement of the science by parents and teachers alike may help to ameliorate the worst negative consequences. It is worth highlighting at this point that student respondents participating in our questionnaire commented on the lack of sex and drug education provided by their parents and by means of the education system. Biomedical issues such as described here are challenging as they involve the status quo, ethics, empowerment and justice across the generations – all matters of societal concern and responsibility. Bioscience ethics, by facilitating free and accurate information transfer from applied science to applied bioethics, may overcome some extant difficulties when communicating matters of socio-political significance.24 It is here that schooling can play a significant role by providing students with informed, supportive and positive learning environments. The availability and use of digital technologies in schools through blogs and wikis set up by teachers now facilitate student engagement in discussion of personal, sensitive topics in a non-identifiable online environment.

Conclusion and Schooling Implication

Lifestyle choices and attitudes to health and wellbeing are a consequence of both genetic and epigenetic variables. Schools are one place where such choices and attitudes can be debated in an informed, positive and supportive learning and teaching environment. However, across many Australian schools education regarding safe sex practices is often not taught in the classroom until students reach high school and for early maturing girls this may not be in time before their first sexual experience. Even lessons on reproductive biology, minus sexuality, are generally not taught until the late primary school years when students are 10-12 years old. To overcome predictable problems, education is an obvious, if not perfect, solution. Girls and boys should be educated about puberty at an appropriate age that correlates with their biological rather than with their chronological age in a learning context that minimizes embarrassment. They should be informed about the physiological changes that go on in their bodies, the emotional and psychological changes they will encounter and, importantly, corresponding changes in the other gender. Sex education with emphasis on safe sexual practices should also be introduced earlier coinciding with their learning about the physiology of reproduction. There should also be education platforms created that explains the risks of drug use and its effects on health including reproductive health and responsibility.

The phenomenon of addiction can be seen as the perfect integration of biological and behavioural factors where experiences that switch genes on and off have biochemical impacts; for example, in at-risk cases drinking and smoking habits may, in turn, increase the risk of major depression in those with a genetic predisposition to depression. Additionally, severe drug addiction is not readily treatable; thus, it becomes critical that targeted counseling should also be available to help young people deal with problems that they may encounter during this period of rapid change. Importantly, prevention rests on early drug awareness education so that potential teachers and parents can make socially responsible choices that help to protect the health of those in their care. Informational programs on their own are frequently ineffective as they may change individual knowledge but not necessarily behaviour. More encouraging outcomes could be found in programs that combine some kind of social competence training with a community wide involvement aimed not only at adolescents but also at their peers, parents and teachers. Such multifaceted efforts, especially if the programs begin when youngsters are preadolescent, ought to be effective in adaptively transforming the learning environment through personal and interpersonal skills development.

In the final analysis; therefore, all the above can be ethically managed with sensitivity and care on the part of parents and teachers. Today’s adolescents must not be ignored and need to be informed about self-respect, love and health, and the consequences of risk taking behaviour. In order to reach adaptive and responsible socio-ethical decision making, accurate biological information must be intelligible and communally accessible. It is in this context that we invite the reader to access the web portal at http://www.bioscience-bioethics.org/ which provides free admittance to educational material in the area of stress physiology, reproduction, developmental toxicology and other useful links for those interested in bioscience ethics and bioethics. Within this context, it is time that sex and related issues be advanced in educational institutions and in the family setting. Without widespread discussion in the classroom and the home, there can be little support between peers battling the same emotions and feelings as they transit into adulthood.

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References


Humanism in medicine as the main premise for rethinking medical ethics education

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“The goal of medical education is to produce the physician we would like to see if we are sick” - Melinkoff

The great humane physician William Osler remarked “The education of the heart- the moral side of man- must keep pace with the education of the head. Our fellow creatures can not be dealt with as man deals in corn and coal. The most important premise for medical ethics education is the view of medicine as a humane enterprise. The medical profession enjoys the privileges of autonomy in practice and self- regulation in society. In return the society expects two fundamental attributes from the physicians- expertise in the scientific aspects of medicine and humanistic care. Unfortunately it is commonly observed now that the ‘human touch’ is not there in the practice of medicine. Samuel Le Baron remarked “W(w)e have lost a healthy and necessary balance in the learning and professing of medicine between knowledge(science) and wisdom(humanism). The word humanism has many connotations. In the context of medical practice it is used in the sense of “an attitude towards other people vaguely described as ‘love of man’ The word is derived from the Latin ‘humanitas’. According to Pellegrino, humanism includes cognitive and affective components, the cognitive aspect pertaining to the physician as a human and the affective component referring to the physician’s feelings towards the patient as a person. Presently it is the affective component that is implied when the word humanism is employed- perceiving the patient as a whole human being situated in his/her psychological and social context. Humanism in medicine is defined as “the physician’s attitudes and actions that demonstrate interest in and respect for the patient and that address the patient’s concerns and values.”

The concept of humanism in medical practice has a long history, since the beginning of the Hippocratic tradition. In ancient India, the Caraka Samhita and Susruta Samhita laid down the codes of conduct for the physicians, students of medicine and their educators. “Thou shalt behave and act without arrogance and with undistracted mind, humility and constant reflection, thou shalt pray for the welfare of all creatures”- Caraka Samhita.

It cannot be disputed that the responsibility of educators of medical professionals lies in producing future physicians who exhibit the quality of humility and