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PACE OF HEALTH

I01 Training Materials

PREVENT SUBSTANCE AND TOBACCO USE FOR FUTURE PARENTS

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OBJECTIVES

At the end of the module, the participants will be able to:

1. Define of substance use and tobacco

2. Identify the impact of substance use and tobacco on pregnancy/mother/child health

3. Explain and understand the root of negative behavior –how behavior starts in general

4. Describe Recommendations (WHO) Examples of evidence based interventions on substance use and tobacco

5. Identify how behavior concerning substance use and tobacco can change

6. Educate for future parents/population for a healthy life style concerning substance use and tobacco/ identify the role of educational programs, the role of community, schools and how the information can be spread

1. General description/ definition of substance use and tobacco

1.1 Context /Description/ definition of substance use and tobacco

Substance use is any consumption of alcohol or drugs *(1)*. It include substances such as, illegal drugs (e.g cannabis, marihuana, heroin, methamphetamines, opioids, cocaine), prescription drugs, cigarettes, solvents and inhalants *(2)*. Substance use may not be a problem or lead to abuse or dependency in some people *(3)*. Substance use does not always lead to addiction; many people occasionally use alcohol or certain drugs without being addicted. However, substance use always comes with the risk that it might lead to addiction *(1)*. F. Scott Fitzgerald pointed out briefly the story of an addiction: *"First you take a drink, then the drink takes a drink, then the drink takes you."*

Tobacco refers to the leaves of the tobacco plant that have been dried and processed for people to roll up and smoke *(4*). The leaves of cultivated tobacco is the main ingredient in cigarettes, and of course, chewing tobacco and snuff. Although the history of smoking dates back to 5000 B.C. (shamanistic rituals in Americas), Europeans discovered tobacco only in 16-th Century. Another writer, Mark Twain, highlighted the challenge this addiction can bring:" *Giving up smoking is the easiest thing in the world. I know because I've done it thousands of times".*

Tobacco contains nicotine, an ingredient that can lead to addiction, which is why so many people who use tobacco find it difficult to quit. There are also many other potentially harmful chemicals found in tobacco or created by burning it *(4*). Poisons, toxic metals, and carcinogens enter the bloodstream with every taken puff (76). Some harmful substances that can be found in tobacco smoke are: poisonous gases such as Carbon monoxide or Hydrogen cyanide, toxic metals (Cadmium, Arsenic) and radioactive toxic metals (Lead), and approximately 70 of the chemicals in cigarettes are known to cause cancer (benzene, formaldehyde, vinyl chloride etc) .(77)

1.2 The impact of substance use and tobacco on pregnancy/mother/child health proved

Substance use during pregnancy remains a significant public health problem, that is linked with several harmful fetal and maternal consequences *(6)*. Drug addiction during pregnancy and postpartum period will produce undoubtedly effects on mother and child health. *(5).* The most frequently used substance in pregnancy is tobacco, followed by alcohol, cannabis and other illicit substances. The damage produced in pregnancy by consuming these substances depends on which drug is being used and the degree of use, as well as the point of exposure to it *(6).*
If you, as future parents are consumers of tobacco, alcohol or other substances, be aware that your child will have no choice and he will also become a consumer suffering all the consequences of these addictions.

Some parents think that in pre-conception period their behavior do not harm the future child. Even if we are talking about months or years about conception, future parents' lifestyle could influence a lot the health of their offspring. It is already known that alcohol and smoking could damage the sperm which is produced continuously in a 74 days' cycle; if the child is conceived into that period, the risk for his health could rise high.

Tobacco: It is already recognized that smoking in pregnancy harms mother and infant health but all these outcomes could be prevented if mother understands her responsibility and stop smoking as soon as possible. A Christian writer said that "each of us should think of the future. Every puff on a cigarette is another tick closer to a time bomb of terrible consequences". Maternal smoking during pregnancy is considered to be one of the most important causes of complications in pregnancy and is associated with an unfavorable outcome in childbirth compared with pregnancy in non-smokers. Specifically, smoking during pregnancy increases the likelihood of placenta praevia, abruptio placentae, ectopic gestation *(7*) and premature rupture of the membranes (PRM*) (7-9)*). So, pregnant women who smoke cigarettes run an increased risk of miscarriage *(4,8, 10,11).*

Also, smoking during pregnancy passes carbon monoxide, nicotine and other harmful chemicals to baby, so it could cause many problems for unborn baby's development (12*)*. It is associated with fetal growth restriction *(8,9) and* it raises the risk of stillborn/ perinatal mortality or premature infants, or infants with low birth weight *(4,5,7,12)*, or with birth defects (*12)*.
The prospective fathers who smoke may increase the risk of congenital heart defects in their future children, according to a study published today in the *European Journal of Preventive Cardiology*, a journal of the European Society of Cardiology (ESC). For mothers-to-be, both smoking and exposure to secondhand smoke were detrimental.

In addition, smoking can affect babies after they are born. As these children grow up they present a variety of health problems, including obesity, respiratory diseases /asthma *(8, 10-12),* reduced lung function, overweight, tobacco addiction *(8, 10,11),* attention deficit hyperactivity disorder (ADHD), high arterial blood pressure, *(4,7)*, learning problems (4), behaviour *(7, 8, 10),* cognitive disturbances, future fertility of male infants, congenital abnormalities and infantile autism with the daily maternal smoking in early pregnancy *(7).* There is also a higher risk of dying from sudden infant death syndrome (SIDS) *(7,8,12).*

Also, **maternal tobacco smoking** can causes problem on mother health. It can lead to chronic bronchitis, lung cancer and emphysema. It increases the risk of heart disease, which can lead to stroke or heart attack. Smoking has also been linked to other cancers, leukemia, cataracts, Type 2 Diabetes, and pneumonia. All of these risks apply to use of any smoked product, including hookah tobacco. *Hookah includes single- or multi-stemmed instrument for vaporizing and smoking flavored tobacco, even cannabis or sometimes opium whose vapor or smoke is passed through a water basin—often glass-based—before inhalation.* Smokeless tobacco increases the risk of

cancer, especially mouth cancers *(4)*. **Secondhand smoke exposure**, either coming from the burning end of the tobacco product or exhaled by the person who is smoking can cause health problems such as coughing, phlegm, reduced lung function, pneumonia, bronchitis and can lead to lung cancer and heart disease *(4)*.

Alcohol: There is no known amount of alcohol that is safe for a woman to drink in pregnancy. The drinking alcohol in pregnancy can causes child born with lifelong fetal alcohol syndrome disorders (FASD). Children with FASD may have a mix of behavioral, physical and learning problems *(12)*. Episodic drinking involving ≥4 drinks per day during pregnancy may increase risk for child mental health problems and lower academic attainment even if daily average levels of alcohol consumption are low *(13)*. How feels a mother who drunk during pregnancy when she looks at her child face? She will see all her life the mark of her reckless behavior…

Illegal drugs: Using illegal drugs such as methamphetamines and cocaine can cause underweight babies, birth defects, or withdrawal symptoms after birth *(12)*.

Misusing prescription drugs: Taking prescription medicines by pregnant women, without following their health care provider's instructions may be dangerous to take more medicines than they are supposed to, use them to get high, or take someone else's medicines. For example, misusing opioids can cause withdrawal in the baby, birth defects or even loss of the baby, or withdrawal symptoms after birth *(12)*.

1.3 The root of negative behaviour- how behaviour starts in general

Sociocultural factors: There are many sociocultural factors that influence drug use and alcohol. They deal with the impact of culture and society on addiction. The peer pressure can influence the use. Having friends who do drugs or drink significantly increases the chances that someone will do those things *(1)*. There are also segments of society for whom alcohol and drugs are seen as an escape. Celebrities are often trapped in a cycle of drug and alcohol dependency that they use as a way to escape the pressures of trying to be perfect for the cameras *(1)*. Also, adverse family conditions, including low levels of parental supervision and single-parent families, have been associated with both smoking and alcohol initiation. Adverse family conditions during childhood also are linked to initiation of illicit substance use, although several studies have found illicit drugs in peer networks to be predominantly associated with initiation of illicit substance use *(14)*.

Psychodynamic factors: In addition to the sociocultural factors that influence addiction, there are also psychodynamic factors that contribute to a person's addiction. Psychodynamic factors are past history, emotional issues and psychological disorders. Past history and emotional issues are often linked together. A person who has experienced abuse, for example, might feel powerless and scared. They might then turn to drugs or alcohol to deal with those feelings *(1)*. Often, psychodynamic factors are subconscious. That is, a person doesn't realize that they are using drugs

and alcohol to deal with the issues they have with their past. In fact, a person might not even realize that they have issues with their past! *(1)*. Also, an unwanted pregnancy was associated with cigarette smoking during pregnancy, but not with any other forms of substance use *(15)*. In addition, a brief personality risk profile the Substance Use Risk Profile Scale found that, hopelessness, impulsivity, and sensation seeking, were positively related to current and future substance use; while one, anxiety sensitivity, was negatively related *(16)*.

2. Main researches/studies concerning the substance use and tobacco

.1 Conclusions about negative aspects of future parents' behaviours concerning substance use and tobacco and the impact on children health

Prenatal substance use is an important public health issue associated with several harmful effects on the mother and the fetus. The most commonly used substance in pregnancy is tobacco, followed by alcohol, cannabis and other illegal substances (6*)*.

Smoking

One great meta-analysis in 2011 from the University College of London for the effects of maternal smoking on the fetus, used one hundred and seventy-two articles (included observational studies which published 1959-2010): a total of 173 687 malformed cases and 11 674 332 unaffected controls. There were found significant positive associations with maternal smoking and for cardiovascular/heart defects, musculoskeletal defects, limb reduction defects, missing/extra digits, clubfoot, craniosynostosis, facial defects, eye defects, orofacial clefts, gastrointestinal defects, gastroschisis, anal atresia hernia and undescended testes *(17)*.

Another research, conducted by *Wehby G. L., Prater K.K., McCarthy A.M., et al., (2011),* evaluated the effects of maternal smoking during pregnancy on child neurodevelopment between 3 and 24 months of age and interactions with socioeconomic status (SES). It included 1,584 children between ages 3 and 24 months who attended 24 pediatric practices in Argentina (671 infants), Brazil (525 infants) and Chile (388 infants) for routine well-child care in 2005 and 2006. The results showed that smoking has large adverse effects on neurodevelopment, with larger effects in the low SES sample. So maternal smoking in pregnancy may significantly reduce early child neurodevelopment *(18)*.

In addition, one study examined whether the effect of maternal smoking during pregnancy on birthweight of the offspring was mediated by smoking-induced changes to DNA methylation in cord blood. First, it used cord blood of 129 Dutch children exposed to maternal smoking vs 126 unexposed to maternal and paternal smoking (53% male) participating in the GECKO Drenthe birth cohort. DNA methylation was measured using the Illumina Human Methylation 450 Beadchip. Functional network analysis suggested a role in activating the immune system. Additionally, it was observed a potentially mediating role of DNA methylation in the association between maternal smoking during pregnancy and birthweight of the offspring. Finally,that network

and enrichment analyses indicated that smoking in the mother may induce a cellular immune responsein the fetus. Conclusionally, maternal smoking during pregnancy was associated with cord blood methylation differences *(19).*

Substance use

The impact of maternal substance use is reflected in the 2002–2003 National Survey on Drug Use and Health. Among pregnant women in the 15–44 age group, 4.3%, 18% and 9.8% used illicit drugs, tobacco and alcohol, respectively. Effects on the neonate include a decrease in growth parameters and increases in central nervous system and autonomic nervous system signs and in referrals to child protective agencies. In childhood, cognitive and behavioral effects are seen after prenatal cocaine exposure; alcohol and tobacco have separate and specific effects. The ongoing use of alcohol and tobacco by the caretaker affects childhood behavior. Therefore, efforts should be made to prevent and treat behavioral problems as well as to limit the onset of drug use by adolescent children born to women who use drugs during pregnancy *(20).*

A retrospective, hospital-based, case-control study was conducted with 280 ADHD (Attention-Deficit Hyperactivity Disorder) cases and 242 non-ADHD controls of both genders. The case and control children and their relatives were systematically assessed with structured diagnostic interviews. The results showed that ADHD (Attention- Deficit Hyperactivity Disorder) may be an additional deleterious outcome associated with prenatal exposure to alcohol independently of the association between prenatal exposure to nicotine and smoke products and other familial risk factors for the disorder *(21).*

Another research involved interviewing women who gave birth in Washington DC hospitals during 1992.The results show a history of induced abortion was associated with elevated risk for maternal substance use of various forms; whereas other forms of perinatal loss (miscarriage and stillbirth) were not related to substance use *(15).*

Baily B.A, McCook J.G., Hodge A. and Mc Grady L. (2011) examined the impact of pregnancy tobacco use, relative to use of illicit drugs, on birth outcomes. Women (n=265) were recruited at entry to prenatal care, with background and substance use information collected during pregnancy. Among women who smoked, the adjusted mean birthweight gain was 163g for those not using hard illicit drugs and smoking had a birthweight gain of 352g. Among substance using pregnant women, smoking cessation may have a greater impact on birthweight than eliminating illicit drug use *(22).*

In addition, *Shankaran S., Das A., Bauer C.R., , Henrietta S. Bada H. S., et al(2004)* in their research determined the effects of patterns of drug use during term pregnancy on infant growth

parameters at birth. A total of 241 cocaine-exposed women and 410 non–cocaine-exposed women participated in the study. In the cocaine-exposed group, 90% used tobacco, 75% used alcohol and 53% used marijuana; in the non–cocaine-exposed group, 57% used alcohol, 34% used tobacco, and 19% used marijuana. Birth weight, birth length, and head circumference were significantly greater among infants born to women who used no drugs, compared with women with any cocaine, opiate, alcohol, tobacco, or marijuana use, and were greater among infants born to cocaine nonusers, compared with cocaine users. Conclusionally, patterns of tobacco use during pregnancy affect length, birth weight and head circumference, whereas cocaine affects birth weight and head size, when adjustments are made for confounders, including multidrug use *(23).*

Cannabis is the most commonly consumed illicit drug among pregnant women. Intrauterine exposure to cannabis may result in risks for the developing fetus. The importance of intrauterine growth on subsequent psychological and behavioral child development has been demonstrated (24*).* Additionally, one research examined the relation between maternal cannabis use and fetal growth until birth in a population-based sample. It approximately 7,452 mothers enrolled during pregnancy and provided information on substance use and fetal growth. It was found that maternal cannabis use in pregnancy was associated with growth restriction in mid-and late pregnancy and with lower birth weight. This growth reduction was most pronounced for fetuses exposed to continued maternal cannabis use during pregnancy. Fetal weight in cannabis-exposed fetuses showed a growth reduction of −14.44 g/week (95% confidence interval −22.94 to −5.94, $p = .001$) and head circumference (−0.21 mm/week, 95% confidence interval −0.42 to 0.02, $p = .07$), compared with nonexposed fetuses. Maternal cannabis use during pregnancy resulted in more pronounced growth restriction than maternal tobacco use. Paternal cannabis use was not associated with fetal growth restriction**.** Conclusionally, maternal cannabis use, even for a short period, may be associated with several adverse fetal growth trajectories *(24).*

Paternal cannabis use was not associated with fetal growth restriction**.** Conclusionally, maternal cannabis use, even for a short period, may be associated with several adverse fetal growth trajectories *(24).*

2.2 Conclusions about positive behaviors concerning substance use and tobacco and the impact on children health

Pooled results of behavioral intervention studies indicate that treatment reduced preterm births and the proportion of infants born with low birth weight, compared with usual care *(25)*.This finding is supported by an analysis of pooled results from studies with economically disadvantaged pregnant smokers, which found that voucher-based incentives improved sonographically estimated fetal growth, birth weight, percentage of low-birth-weight deliveries, and breastfeeding duration *(26,27).*

3. Recommendations (WHO) Examples of evidence based interventions Substance use and tobacco –to avoid

3.1 Tobacco use- Examples of evidence based interventions

Providing brief tobacco cessation advice, pharmacotherapy (including nicotine replacement therapy) and intensive behavioral counselling services

Effective treatments can lead to permanent smoking cessation, including both behavioral therapies and FDA (Food and Drug Administration)-approved medications. Research indicates that smokers who receive a combination of behavioral treatment and cessation medications quit at higher rates than those who receive minimal intervention *(28).* Interventions such as **brief tobacco cessation advice** from a health care worker, telephone helplines, automated text messaging, and printed self-help materials can also facilitate smoking cessation *(29).* Cessation interventions utilizing mobile devices and social media also show promise in boosting tobacco cessation *(30).* It is significant for cessation treatment to be as personalized as possible, as some people smoke to avoid negative effects of withdrawal while others are more driven by the rewarding aspects of smoking *(31).*

Behavioral Treatments Behavioral treatments use a variety of methods to help people quit smoking, ranging from self-help materials to counseling. These treatments teach people to recognize high-risk situations and develop strategies to deal with them. For example, people who hang out with others who smoke are more likely to smoke and less likely to quit (*4)*. **Behavioral counseling** is typically provided by specialists in smoking cessation for four to eight sessions *(32).* Both in-person and telephone counseling have been found beneficial for patients who are also using cessation medications *(33)*.

A review aimed to synthesize the evidence regarding the effectiveness of interventions in increasing smoking cessation care provision in hospitals. That identified relevant studies published between 1994 and 2006. Meta-analysis of controlled trials demonstrated a significant intervention effect for provision of assistance and counseling to quit (pooled risk difference = 16.6, CI = 4.9-28.3) but not for assessment of smoking status, advice to quit, or the provision or discussion of NRT. Interventions can be effective in increasing the routine provision of hospital smoking cessation care *(34).*

The UK Stop Smoking Services (SSS) provide access to free at-the-point-of-use help to quit. Trained advisors give support and counselling, and can prescribe a variety of stop smoking medications. They were set up in 1999 to reduce deaths particularly from cancer and coronary heart disease. More than 724,247 people accessed the services in England between April 2012 and March 2013 thus the Stop Smoking Services prevented more than 18,000 premature deaths in one year alone. Clients were very satisfied with the services according to a client satisfaction

survey. The best chances of success come from seeing specialists who are trained to give the best support. Some smokers need this extra help to quit and so continued investment in these services is vital if more people are to stop smoking for good *(35)*.

Cognitive Behavioral Therapy (CBT)—CBT helps patients identify triggers—the people, places, and things that spur behavior—and teaches them relapse-prevention skills (e.g., relaxation techniques) and effective coping strategies to avoid smoking in the face of stressful situations and triggers *(36)*. A study that compared CBT and basic health education observed that both interventions reduced nicotine dependence *(37)*.

Motivational Interviewing (MI)—In MI, counselors help patients explore and resolve their ambivalence about quitting smoking and enhance their motivation to make healthy changes. MI is patient-focused and nonconfrontational, and providers point out discrepancies between patients' values or goals and their current behaviors. They adjust to patients' resistance to change and support self-efficacy and optimism *(36)*. Study of MI suggest that this intervention results in higher quit rates than brief advice to stop smoking or usual care *(38)*.

Mindfulness—In mindfulness-based smoking cessation treatments, patients learn to increase awareness of and detachment from thoughts, sensations and cravings that may lead to relapse *(39)*. Interest in mindfulness-based treatments has increased during the past decade, and studies show that this approach benefits overall mental health and can help prevent relapse to smoking *(40)*.

Text messaging, web-based services, and social media support-Technology, including mobile phones, internet, and social media platforms can be used to provide smoking cessation interventions. These technologies have the power to increase access to care by extending the work of counselors and overcoming the geographical barriers that may deter people from entering treatment *(4)*.

A review of the literature on technology-based smoking cessation interventions (personal computer, internet and mobile telephone) found that these supports can increase the likelihood of adults quitting, compared with no intervention or self-help information, and they can be a cost-effective adjunct to other treatments *(41)*. A technology does not necessarily have to be recent or highly sophisticated to help boost cessation rates. For example, study suggest that adults who receive encouragement, advice, and quitting tips via text-message—a capability on even the most basic mobile devices—show improved quit rates compared with control programs *(42)*.

A systematic review and meta-analysis of published randomized trials of technology-based interventions—including internet, computer programs, telephone, and text messaging—for smoking cessation among this population found that they increased abstinence by 1.5 times that of comparison subjects *(2)*.

Nicotine Replacement Therapy: Nicotine replacement therapies (NRTs) were the first medications the U.S. Food and Drug Administration (FDA) approved for use in smoking cessation therapy (4). NRT products supply enough nicotine to help relieve withdrawal symptoms. Current FDA-approved NRT products include chewing gum (a chewing gum that delivers a dose of nicotine orally). Usually lasts about 30 minutes transdermal patch (a nicotine patch is applied directly to the skin and delivers stable levels of nicotine all day), nasal sprays (sprayed through the nostrils every 1-2 hours, delivering rapid peak levels of nicotine), inhalers (a device to puff on, absorbing the nicotine in the mouth and throat), and lozenges (similar to nicotine gum, the lozenge delivers nicotine orally) (44). NRTs deliver a controlled dose of nicotine to relieve withdrawal symptoms while the person tries to quit *(4,44)*.

A Smoking cessation Program was designed with the goal of increasing smoking cessation rates in underserved, vulnerable populations. The program used evidence –based guidelines, Nicotine Replacement Therapy (NRT), and individualized support and follow-up, and was implemented in a free clinic setting. Participants' triggers to smoking included stress, negative emotions, habits, and set-backs to quitting. Participants reported satisfaction with the resources, support, and convenience of the smoking cessation program, and preferred nicotine patches over nicotine gum. *(45)*.

Other Medications: Bupropion (Zyban®) **and varenicline** (Chantix®) are two FDA-approved non-nicotine medications that have helped people quit smoking. They target nicotine receptors in the brain, easing withdrawal symptoms and blocking the effects of nicotine if people start smoking again *(43,44)*.

Medication combinations— A meta-analysis found that a combination of varenicline and NRT (especially, providing a nicotine patch prior to cessation) was more effective than varenicline alone *(46)*.

Therapeutic approach the '5 As': That **therapeutic approach includes 5 A: Ask, Advise, Assess, Assist, Arrange** . It can be implemented within a short period of time at outpatient clinics and discusses the use of nicotine replacement therapy *(47)*.

Combination of physiological and psychological treatment

A study develops and evaluates the outcomes of a smoking cessation program that provides a combination of physiological and psychological treatment in the context of a short-term support group. In this study, ten adult smokers were recruited by means of advertisements broadcast on local television over a seven-day period and one thousand flyers that advertised free assistance with quitting smoking. The three-month program consisted of three, monthly group sessions, free nicotine patches, telephone counseling by public health nurses, and telephone interviews by community health volunteers. At the 9-month follow-up, five of the ten participants (50%) were abstinent, and three (30%) had decreased cigarette consumption by at least 49% of their pretest levels. Eighty percent of participants had, therefore, changed their smoking behavior *(48)*.

Smoking Cessation for Pregnant Women

Pregnant women who smoke run a considerable risk for their children – and this risk increases as a function of the number of cigarettes smoked daily. Since women ideally should not receive any medication during pregnancy, numerous smoking cessation programmes have been designed, based solely on the provision of counselling to women. Data obtained in 37 trials including 16,916 women offer grounds for optimism: a significant reduction in smoking (smoking cessation) was achieved by medical counselling in 34 studies (OR = 0.53; CI: 0.47–0.60) and the percentage of women continuing to smoke was lowered by 6.4% *(49)*. In 8 studies with validated smoking cessation, high-intensity counselling and very stringent assessment criteria, the percentage of women continuing to smoke fell by 8.1% (OR = 0.53; CI: 0.44–0.63) *(49)* . The subset of trials with information on fetal outcome revealed reductions in low birth weight (OR = 0.80; CI: 0.67–0.95) and preterm births (OR = 0.83; CI: 0.69–0.99) and an increase in mean birth weight of 28 g (9–49 g). Ultimately, therefore, these techniques may be regarded as useful for reducing perinatal mortality *(50)*.

Another study show that behavioral treatments are effective, whereas pharmacotherapies have only marginal success *(51)*. A combination of incentives and behavioral counseling is most effective for pregnant women *(52)*. Adding vouchers to routine care (which included free nicotine replacement therapy for 10 weeks and four weekly support phone calls) more than doubled cessation rates during pregnancy *(53)*. Pooled results of behavioral intervention studies indicate that treatment reduced preterm births and the proportion of infants born with low birth weight, compared with usual care *(25,26)*.

3.2 Psychoactive substance use- Examples of evidence based interventions

Nurse-Family Partnership: One program focused on children younger than age 5—the *Nurse-Family Partnership*—has shown significant reductions in the use of alcohol in the teen years compared with those who did not receive the intervention *(54)*. This selective prevention program uses trained nurses to provide an intensive home visitation intervention for at-risk, first-time

mothers during pregnancy. This intervention provides ongoing education and support to improve infant health and pregnancy outcomes and development while strengthening parenting skills.

Raising Healthy Children: The *Raising Healthy Children* program (also known as *Seattle Social Development Project)* is a multicomponent, universal, elementary school program which involve both schools and parents and it is effective in preventing substance misuse. It targets Grades 1 through 6 and combines social and emotional learning, classroom instruction and management training for teachers, and training for parents conducted by school-home coordinators, who work with the children in school and the parents at home, focusing on in-home problem solving and similar workshops. Studies of this program showed reductions in heavy drinking at age 18 (6 years after the intervention) *(55, 56)* and in rates of alcohol and marijuana use *(56).*

Fast Track Program: Another a multicomponent selective and universal prevention program is the *Fast Track Program,* an intensive 10-year intervention that was implemented in four United States locations for children with high rates of aggression in Grade 1. The program includes universal and selective components to improve social competence at school, early reading tutoring, and home visits as well as parenting support groups through Grade 10. Follow-up at age 25 showed that individuals who received the intervention as adolescents decreased alcohol and other substance misuse, with the exception of marijuana use *(57).*

School-based Programs: One well-researched and widely used program is *LifeSkills Training,* a school-based program delivered over 3 years (58*).* Research has shown that this training delayed early use of alcohol, tobacco, and other substances and reduced rates of use of all substances up to 5 years after the intervention ended. A multicultural model, *keepin'it REAL,* uses student-developed videos and narratives and has shown positive effects on substance use among Mexican American youth in the Southwestern United States *(59).*

Family-based Programs: *Strengthening Families Program* (SFP) is an intervention For Parents and Youth 10-*14* which show substantial preventive effects on substance use. It is a widely used seven-session universal, family-focused program that enhances parenting skills— setting limits, specifically nurturing and communicating—as well as adolescent substance refusal skills. Across multiple studies conducted in rural United States communities, SFP showed reductions in tobacco, alcohol, and drug use up to 9 years after the intervention (i.e., to age 21) compared with youth who were not assigned to the SFP *(60,61).* SFP also shows reductions in prescription drug misuse up to 13 years after the intervention (i.e., to age 25), both on its own and when paired with effective skills-focused school-based prevention *(62).*

Coping Power is a 16-month program for children in Grades 5 and 6 who were identified with early aggression. The program, which is designed to build problem-solving and self-regulation skills, has both a parent and a child component and reduces early substance use *(63).*

Internet-based Programs: *'I Hear What You're Saying'* is a computer- and Internet-based intervention also show positive effects on preventing substance use. It involves nine 45-minute sessions to improve communication, establish family rules, and manage conflict. Specifically focused on mothers and daughters, follow-up results showed lower rates of substance use in an ethnically diverse sample *(64).*

Programs for College Students: One analysis reviewed 41 studies with 62 individual or group interventions and found that recipients of interventions experienced reduced alcohol use and fewer alcohol related problems up to four years post intervention *(65).* An example of a brief motivational intervention for which results have been positive to reducing of alcohol use is the *Brief Alcohol Screening and Intervention for College Students* (BASICS). BASICS is designed to help students reduce alcohol misuse and the negative consequences of their drinking. It consists of two 1-hour interviews, with a brief online assessment after the first session. The first interview gathers information about alcohol consumption patterns and personal beliefs about alcohol, while providing instructions for self-monitoring drinking between sessions. The second interview uses data from the online assessment to develop personalized, normative feedback that reviews negative consequences and risk factors, clarifies perceived risks and benefits of drinking, and provides options for reducing alcohol use and its consequences. Follow-up studies of students who used BASICS have shown reductions in drinking quantity in the general college population, among fraternity members, with heavy drinkers who volunteered to use BASICS, and among those who were mandated to engage in the program from college disciplinary bodies *(66).*

4. How behavior can change- the role of professionals

Maine healthcare providers are critical in tobacco and substance abuse prevention and treatment. They provide guidance, resources, medications, and options that help guide users to support and self-management *(44).*

The provider's role includes: -Talking with patients about tobacco and substance use
-Delivering stage appropriate interventions and support
-Assisting in creating plans to quit and/or reduce use
-Identifying substance use concerns among patients with chronic disease
-Developing and implementing effective interventions to prevent youth from using tobacco, alcohol, and drugs *(44).*

Social worker: Evidence shows that problematic substance use is a behaviour that can be changed. With the right support and motivation people can and do change their use. Social workers can support people to identify their motivation for change. Policy frameworks emphasise notions of 'recovery' from problematic substance use and a focus on longer term change supported by the

person's family, peers and community. Given the holistic and ecological framework underpinning social work practice, social workers are well placed to determine who and what is available to offer the person relevant and positive support to change *(67)*.

The following three key roles are the starting point for social workers in relation to substance use:
1. To engage with the topic of substance use as part of their duty of care to support their service users, their families and dependents *(67)*.
2. To motivate people to consider changing their problematic substance using behaviour and support them (and their families and carers) in their efforts to do so *(67)*.
3. To support people in their efforts to make and maintain changes in their substance use. How these are applied to each area of specialist area of social work practice will vary. The roles will also vary depending on the social worker's level of experience and seniority as well as on their role, service environment, and service model. As social workers become more experienced and move into management and mentoring roles, their knowledge and skills would be expected to develop and inform their support and supervision of less experienced staff. Advanced and principal social workers and managers would also be expected to take a strategic leadership role ensuring that responses to substance use are embedded in the organisation *(67)*.

Medical professionals have a significant role to play in screening their adolescent patients for drug use, providing brief interventions, referring them to substance abuse treatment if necessary, and providing ongoing monitoring and follow-up. Screening and brief interventions do not have to be time-consuming and can be integrated into general medical settings *(68*).

Role of the clinicians and midwifes in treating pregnant women

Pregnant women who have received brief counseling on the effects of tobacco, alcohol, and other drug use on their unborn child are more likely to abstain. Clinicians should discuss tobacco and substance use at the first prenatal visit and continue throughout the pregnancy. There are effective interventions for those addicted to tobacco and other substances including medications safe for pregnant women *(44)*.

The midwife have an important role to change the behaviour of pregnant women as she may be the first professional a pregnant woman with substance abuse problems will visit when seeking maternity care. The booking visit when woman first come in contact with the maternity services is the most important. The midwife normally takes a detailed medical and social history. When the woman is referred by the social worker this booking process is less complicated. All midwives should be aware of the local facilities available for these women and refer them appropriately. It is of highly importance to ask questions in the right manner so they do not seem threatening to the woman and build a trusting relationship with the woman. As health care providers who choose to be with woman, midwives must be on the addicted client‘s side as well as at her side *(5).*

A specialist Drug Liaison Midwife would assist in the reduction of the stigma associated with the treatment of pregnant female drug users, ease access to care for pregnant dependent women and help maintain care pathways once established (69*).* It is also suggested that the post would facilitate better communication and working relationships among the professional staff involved in the care of this patient population. The specialist Drug Liaison Midwife as team leader would also create and co-ordinate a team of community midwives able to care effectively for pregnant substance abusers *(5).*

In the community, pregnant user‘s visits should be scheduled more frequently, even weekly because the positive relationships formed between the women and the midwives provide an opportunity to employ a case management approach to care *(70).* Midwives should also work closely with the social worker and be thoroughly informed on these subjects, through continuous professional development, study days or guest speakers from treatment centers for example *(5).* Health authorities grant health professionals the power to attempt to persuade women into changing their lifestyles. Midwives are in a unique position, in that they have an opportunity to establish and maintain a relationship with women over a long period of time *(5).*

5. Education for future parents/population for healthy life style concerning the substance use and tobacco and in general- the role of educational programs, the role of community, schools. How information can be spread

The role of the school and of the educational programs in drug abuse prevention:

The school can influence skills by teaching , impart knowledge, establish a sound values base in relation to health and drug use and attitudes that may, in turn, influence drug use. Evaluation of the programme should focus on the classroom level of knowledge, attitudes, values and skills that represent the immediate impact of the programme. Informal evaluation or professional judgement *(71).* Schools have the opportunity to work with parents, health care professionals, and community officials to use programs with proven effectiveness, to identify students who show behavioral risks for drug-related problems, and to make referrals to a student's medical home *(72).*

School-based education for drug abuse prevention: Education for drug abuse prevention in schools may be defined as the educational programmes, procedures, policies and other experiences that contribute to the achievement of broader health goals of preventing drug use and abuse. Education for drug abuse prevention should be seen to include both informal and formal health curricula, the creation of a safe and healthy school environment, the provision of appropriate health services and support as well as the involvement of the family and the community in the planning and delivery of programmes *(71).*

Recommendations for school health programs to prevent tobacco use and addiction

To ensure the greatest impact in preventing tobacco use among youth, schools should implement all seven following recommendations. These guidelines are based on an in-depth review of research, theory, and current practice in the area of school-based tobacco-use prevention. The guidelines recommend that all schools:

1. Develop and enforce a school policy on tobacco use.
2. Provide instruction about the short- and long-term negative physiologic and social consequences of tobacco use, social influences on tobacco use, peer norms regarding tobacco use, and refusal skills.
3. Provide program-specific training for teachers.
4. Support cessation efforts among students and all school staff who use tobacco
5. Provide tobacco-use prevention education in kindergarten through 12th grade; this instruction should be especially intensive in junior high or middle school and should be reinforced in high school.
6. Involve parents or families in support of school-based programs to prevent tobacco use.
7. Assess the tobacco-use prevention program at regular intervals *(73).*

School health programs to prevent tobacco use could become one of the most effective national strategies to reduce the burden of physical, emotional, and monetary expense incurred by tobacco use *(73).* To achieve maximum effectiveness, school health programs to prevent tobacco use must be carefully planned and systematically implemented. Carefully planned school programs can be effective in reducing tobacco use among students if school and community leaders make the commitment to implement and sustain such programs *(73)*.

In universal programmes self-control training, problem solving skills training, and techniques from cognitive behavioural therapy appeared beneficial for the majority of students. In programmes for high risk students, programmes with a social influences approach, refusal skills training, and health education, were related to adverse results in the majority of high risk students. For most substance use prevention strategies, however, it was found differential effects for the different developmental stages. Many of these findings can be subscribed to changes in biological, cognitive, emotional and social development as well as to changes in the physical and social environment that take place in childhood and adolescence**.** The analyses of universal programmes

revealed that generic programmes, teaching basic skills such as social skills, self-control and problem solving skills, and healthy behaviours are most benificial for elementary school students *(74)*.

Middle adolescence is an extremely difficult period for substance use prevention. High-risk students benefit most from programmes based on the principles of cognitive behavioural therapy, teaching students to cope with stress and anxiety. Although the findings imply that behavioural change in middle adolescence is possible, this appears only achievable with individuals already demonstrating substance use (problems), who are willing to change *(74)*.

As late adolescents, opposed to early and middle adolescents, do benefit from universal programmes based on a social influences approach teaching refusal skills. As late adolescents are less oriented on the needs, expectations and opinions of their peers, it makes sense that programmes applying a social influence approach and programmes teaching refusal skills are effective in this specific developmental period. During this period, adolescents want to develop their own identity. Programmes that assist them to do so are therefor likely to connect well. Health education on the interference of substance use with personal goals is also an effective substance use prevention strategy in universal programmes, which is in accordance with late adolescents' future orientation. In addition, basic skill training such as self-control and problem solving or decision making skills training appears effective as well, which is in line with the developmental task of acquiring the necessary skills for the transition to adulthood. Finally, the involvement of parents can result in more positive outcomes as well, which is consistent with the improved parent-adolescent relationships. It could be that in these high risk late adolescents, who are already heavily experimenting with substance use, substance use has become part of their identity *(74)*.

Teaching strategies-Interactive teaching and the life skills approach A life skills approach is a way of teaching and interacting with young people that has the potential to lead to better health and drug abuse prevention learning outcomes and may ultimately influence student drug use. Life skills are best taught through interactive methods and are most effective when applied and practised in potential drug use situations that are relevant and meaningful to the social situations of students *(71)*. The life skills approach is more effective when: Teachers or facilitators have the capacity to boost students' sense of self-worth The classroom atmosphere is non-threatening and non-judgemental *(71)*.

Engaging the community in drug abuse prevention: Schools can enlist the help of the wider community in drug abuse prevention by: Involving the school community (students, people working at the school, families and the community at large being served by the school) in local and national health events, youth and community service activities and local action groups; Involving the community in activities related to newsletters, pamphlets, web sites, committees, open days, student homework activities, forums, information evenings; Involving the community

in conducting drug-free activities for students;Involving the community in the review of school policy statements and programmes; Engaging the community in sponsoring education for drug abuse prevention programmes in schools; Involving the community in teacher training workshops; Involving the community in working with youth groups in schools. School-based education for drug abuse prevention reflects care, understanding and involvement *(71)*.

The role of parents: An integrative review of the literature was conducted to examine which elements of parent–child connectedness and substance-use specific communication are effective across adolescent alcohol, tobacco and drug use. Forty-two English language, peer reviewed articles were reviewed. Open communication occurs within the context of high connectedness between parents and their children. Conversations about health risks are associated with lower levels of substance use while more frequent conversations, those about parents' own use, permissive messages and consequences of use are associated with higher levels of use. There are disparities regarding conversations about use of each substance: alcohol and tobacco are easier topics of conversation while drug use is rarely discussed. Parental alcohol and tobacco use can influence the credibility of their communication with their child. Parents should be encouraged to have open, constructive, credible, two-sided conversations with their adolescents about substance use. Interventions to improve parents' communication skills around substance use, particularly drug use, should include the types of approaches and messages highlighted in this review, and, where possible, these interventions should include all family members *(75)*.

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