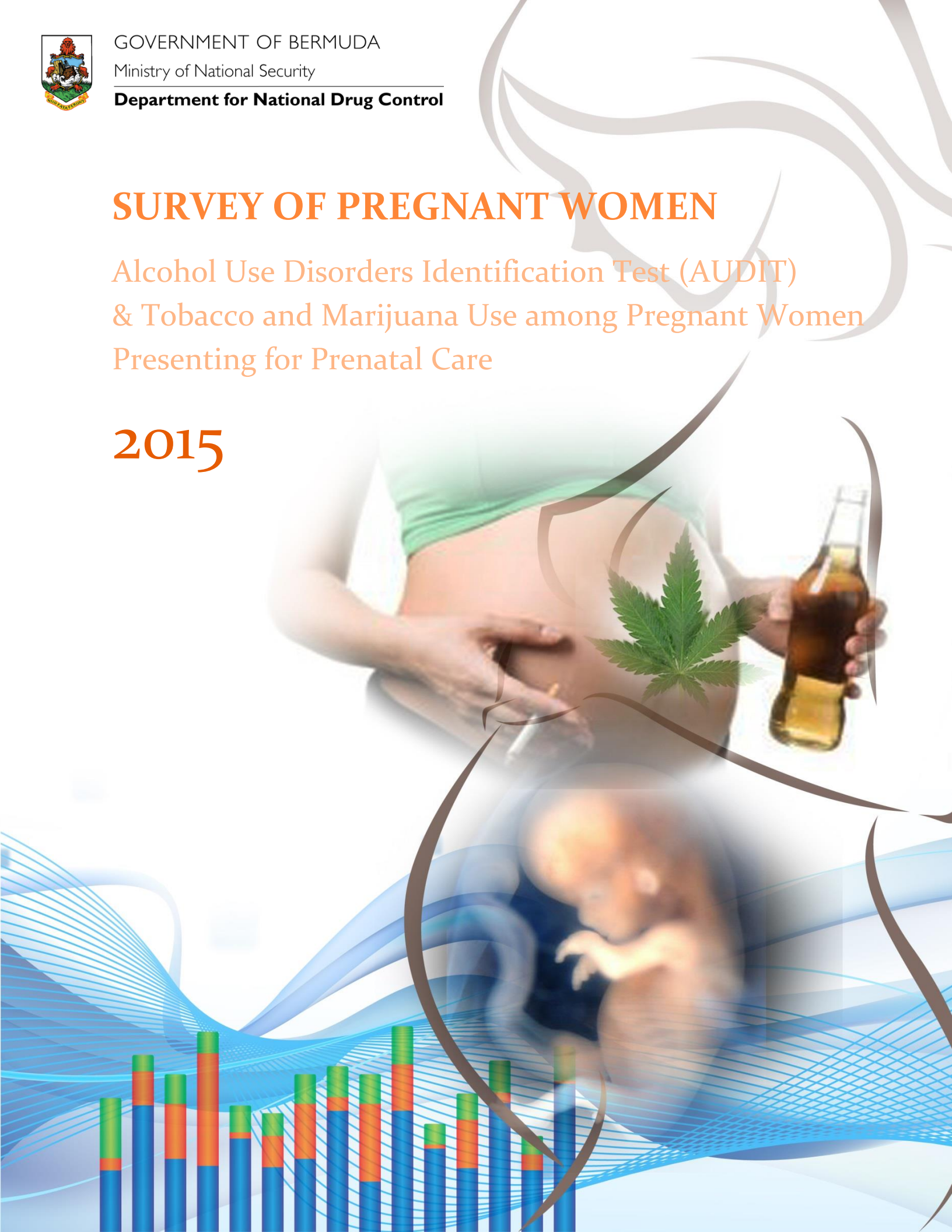
GOVERNMENT OF BERMUDA
Ministry of National Security
Department for National Drug Control

SURVEY OF PREGNANT WOMEN

Alcohol Use Disorders Identification Test (AUDIT) & Tobacco and Marijuana Use among Pregnant Women Presenting for Prenatal Care

2015



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CONTENTS

SURVEY HIGHLIGHTS

- Strong likelihood of hazardous or harmful alcohol consumption related to binge-drinking.
- Small but important proportion of current smokers of both cigarettes and marijuana.
  - A few women did continue smoking even while in their second or third trimester of pregnancy.
  - There were a few persons who are currently using marijuana while being pregnant (at least those in their second and third trimesters).
- Women indicated quitting cigarette smoking because they became pregnant.
- From a public health point of view, a considerable proportion of women indicated that their doctor or other health professional had not discussed the harmful effects of smoking with them since becoming pregnant.
- Considerably high proportion indicated that they were aware of the harmful effects of smoking during pregnancy.
- Some women thought that smoking cigarettes was definitely not harmful to one's health.
- No one who had stopped smoking cigarettes indicated an intent to continue doing so both in the short and long-term.

TAKE HOME MESSAGE

Drinking

- Although it is known that heavy drinking during pregnancy can cause birth defects, many do not realise that moderate—or even light—drinking also may harm the foetus.
- Drinking excessively throughout pregnancy or having repeated episodes of binge drinking increases the risk of foetal alcohol syndrome (FAS).

Smoking

- Cigarette smoking during pregnancy adversely affects the health of both mother and child.
- The risk for adverse maternal conditions (e.g., premature rupture of membranes, abruptio placentae, and placenta previa) and poor pregnancy outcomes (e.g., neonatal mortality and stillbirth, preterm delivery, sudden infant death syndrome, and lower birth weight for infants carried to term) is increased by maternal cigarette smoking.
- The adverse effects of cigarette smoking may occur in every trimester of pregnancy.

Marijuana Use

- Marijuana can affect foetal and infant development and may cause miscarriage.
- Prenatal marijuana use can alter genes and biological signals critical to the formation of a normal placenta during pregnancy and may contribute to pregnancy complications like preeclampsia, and is linked to premature births, small birth size, difficult or long

labour, and an increase in newborn jitteriness.

- Using marijuana during pregnancy could affect a baby's brain development by interfering with how brain cells are wired. Prenatal cannabis disrupts synapses [nerve connections] critical for higher order executive and cognitive function. The brain may be particularly sensitive to THC (delta-9-tetrahydrocannabinol) during early development, when neurons are forming critical connections.

- The effects of prenatal marijuana exposure can have long-term effects on infants and children, such as having trouble paying attention or learning to read, and could even last into adulthood. The drug could have direct effects, or it could sensitize the brain to future drug exposure or neuropsychiatric illnesses.

- Marijuana is never safe during pregnancy and it can harm the baby at any stage.

INTRODUCTION

This synopsis report presents information from the Survey of Pregnant Women, which included the Alcohol Use Disorders Identification Test (AUDIT) and assessment of the use of tobacco and marijuana among pregnant women who sought prenatal care at their physician (Obstetrician-Gynecologist [OB-GYN] or General Practitioner [GP] providing antenatal care) during the three-week period of January 19th to February 6th, 2015. This is the third survey of this nature conducted among pregnant women in Bermuda; the first occurring in 2005 followed by the second in 2010.

The purpose of this survey was to continue monitoring the prevalence-of-use of alcohol, tobacco, and marijuana among pregnant women; assess changing trends, if any, evident within this population; and gather the latest information on the use of these substances to support the DNDC's alcohol, tobacco, and marijuana use campaigns. The rationale is that alcohol, tobacco, and marijuana use in pregnancy increases the risk of negative pregnancy outcomes.

The AUDIT is a set of ten simple questions on alcohol use that takes about two minutes to complete and is designed to identify persons whose alcohol consumption has become hazardous or harmful to their health. The section on tobacco comprised of 12 questions that sought to identify the respondents' consumption patterns and their perception of harm and their intentions to use tobacco (cigarettes) in the future. Additionally, questions related to marijuana use were asked.

The main focus of this report is to present the findings of the survey and make suggestions about possible prevention and intervention aspects that need to be highlighted in the alcohol and tobacco campaigns especially as it would relate to the use of these substances during pregnancy.

METHODOLOGY

Survey Design

This survey was conducted over a three-week period, from Monday, January 19th – Friday, February 6th, among all pregnant women presenting for prenatal care at their obstetrician and gynecologist. The proposed survey design is briefly described in the subsequent sub-sections.

Target Population

The survey targeted all pregnant women in Bermuda presenting for prenatal care at their obstetrician or gynecologist, whether in the private or public sector, during the three-week period of survey administration. Specifically, seven private obstetricians or gynecologists were contacted. Permission, therefore, had to be sought from each practitioner to allow their clients to be surveyed; all of whom agreed to their respective practices', and by extension clients' participation in the survey. In addition, the government-funded clinic was also targeted and approval, including that of the Bermuda Research Ethics Committee, was subsequently given for the survey administration.

Sampling

For the purpose of this study, and for comparison with previous rounds, the same sampling procedure, of a census of all patients presenting for prenatal care within the specified survey administration period, was utilised.

Questionnaire

The Alcohol Use Disorders Identification Test (AUDIT), a standardised tool[1] of the WHO's Department of Mental Health and Substance Dependence was utilised; in addition to standard tested questions on tobacco and marijuana use and perceptions. The AUDIT is a set of 10 simple questions on alcohol use that is designed to identify persons whose alcohol consumption has become hazardous or harmful to their health. The questionnaire has excellent construct validity and as such can be used to determine with high sensitivity and specificity hazardous alcohol use; presence or emergence of alcohol dependence; and harmful alcohol use. The section on tobacco and marijuana comprises of 12 questions that sought to identify the respondents' consumption patterns and their perception of harm and intentions to use tobacco (cigarettes) and marijuana in the future.

The 25 questions were presented in the questionnaire as follows (see Appendix I):

- I: AUDIT – consists of 10 questions, plus two other questions on alcohol use.

[1] See http://whqlibdoc.who.int/hq/2001/WHO_MSD_MSB_01.6a.pdf

- II: Tobacco and Marijuana Use Identification Test – consists of 12 questions on tobacco and marijuana use and perceptions.
- III: Demographics – consists of three questions.

Data Collection

Data collection was through a self-administered paper and pencil method. The questionnaire was provided to each patient by a staff of the practice (the receptionist or the nurse) to be completed while waiting to be seen by the physician and was returned upon completion to the staff for subsequent collection by the DNDC.

The questionnaire took approximately five to 10 minutes to be completed. Participation was voluntary; though it was encouraged. Respondents' participation or refusal in no way affected the care that the patients received.

CONFIDENTIALITY

All information provided by the patients is held by the staff of the practice under doctor-patient confidentiality. The survey was anonymous, in that a patient was not required to provide her name or any other identifying information. All information provided to the DNDC is held in the strictest confidence, and in keeping with the DNDC Act of 2013. In reporting, it is the Department's standard practice to present data in aggregated form where no one individual's information can be recognised.

SURVEY PARTICIPANTS

A total of 238 persons participated in the survey; representing women presenting for prenatal care during the period January 19th to February 6th, 2015 and who completed the survey. There were few presenting pregnant women who refused to participate in the survey.

Overall, the number of responses represents approximately 99% of all pregnant women who were to be seen by their obstetricians during the three weeks of administering the survey (based on obstetrics records of the practitioners). A distinction is made between all pregnant women in Bermuda and all pregnant women presenting for prenatal care during the snapshot period of the three weeks of survey administration. It should be noted that not all pregnant women in Bermuda would have presented for prenatal care during the survey administration period as their visit is usually dependent on how far along they are with their pregnancy. For instance, some women are seen every four weeks and as such their doctor's visit may or may not have been during the period of the survey.

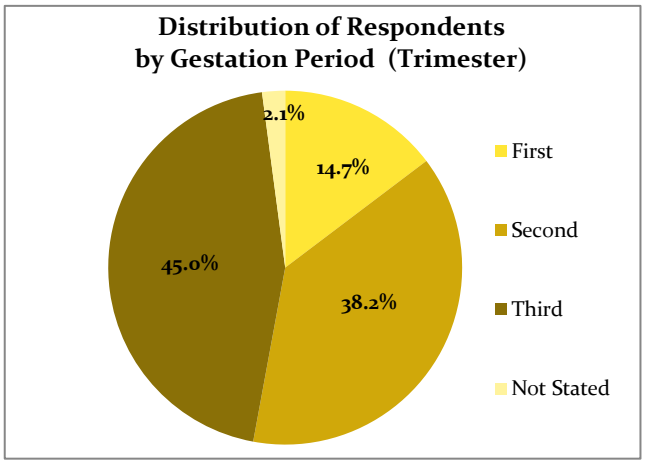
Age

Participants' ages ranged from 16 to 41 years. The average age of all survey respondents was 31.5 years. Most of the participants (39.9%) were between the ages 30 and 34 years. A significant proportion (60.5%), or six in 10, of the women surveyed were in their thirties. Pregnant teenagers account for 2.1% of all respondents, while women over 40 years account for 5.9%.

Age Group (Years)	Respondents	
	n	%
15 – 19	5	2.1%
20 – 24	17	7.1%
25 – 29	54	22.7%
30 – 34	95	39.9%
35 – 39	49	20.6%
40+	14	5.9%
Not Stated	4	1.7%
Total	**238**	**100.0**

Gestation

Gestation is the period of time between conception and birth. During this time, the baby grows and develops inside the mother's womb. Pregnancy or gestational age (describing how far along is the pregnancy) is measured in trimesters totaling approximately 40 weeks. The first trimester of pregnancy is week one through week 12, or about three months. The second trimester is week 13 to week 27. The third trimester of pregnancy spans from week 28 to the birth.



Most women surveyed (45.0%) were in their third trimester of pregnancy; while 38.2% were in their second trimester, followed by 14.7% of them who were in their first trimester. Five women (1.7%) did not indicate their gestational age.

Age Group (Years)	Respondents by Trimester									
	1st		2nd		3rd		Not Stated		Total	
	n	%	n	%	n	%	n	%	n	%
15 – 19	-	-	3	1.3	2	0.8	-	-	5	2.1
20 – 24	4	1.7	2	0.8	11	4.6	-	-	17	7.1
25 – 29	7	3.0	26	10.9	21	8.8	-	-	54	22.7
30 – 34	18	7.6	31	13.0	46	19.3	-	-	95	39.9
35 – 39	4	1.7	23	9.7	21	8.8	1	0.4	49	20.6
40+	2	0.9	6	2.5	6	2.5	-	-	14	5.9
Not Stated	-	-	-	-	-	-	4	1.7	4	1.7
Total	35	14.7	91	38.2	107	45.0	5	2.1	238	100.0

Parity

Parity, or the number of times a woman has been pregnant (for 20 or more weeks regardless of whether the infant is dead or alive at birth), does not include the current pregnancy. Parity, or the number of previous pregnancies, has been shown to impact the long-term health status of women and pregnancy outcomes, specifically birth weight, for some groups, or excessive maternal postpartum weight retention and iron deficiency.

In this survey, women were asked whether the current pregnancy was their first. Of the 238 respondents, 39.9%, or two in five women, said 'Yes' while 58.4%, or about three in five women, responded 'No'. All of the respondents who were teenagers indicated that the current pregnancy was their first and represent 2.1% of all respondents. Similarly, in the 20-24 age group, more women (3.8%) reported that they have not had a previous pregnancy. In contrast, for all of the other age groups, more women indicated that they have previously been pregnant. There were 1.7% of pregnant women 40 years or older who indicated that the current pregnancy was their first.

Age Group (Years)	Respondents & First Pregnancy					
	Yes		No		Not Stated	
	n	%	n	%	n	%
15 – 19	5	2.1	-	-	-	-
20 – 24	9	3.8	8	3.4	-	-
25 – 29	22	9.2	32	13.4	-	-
30 – 34	44	18.5	51	21.4	-	-
35 – 39	11	4.6	38	16.0	-	-
40+	4	1.7	10	4.2	-	-
Not Stated	-	-	-	-	4	1.7
Total	**95**	**39.9**	**139**	**58.4**	**4**	**1.7**

SURVEY RESULTS

ALCOHOL USE DISORDERS IDENTIFICATION TEST (AUDIT)

Consumption Patterns

The basic assumption in the interpretation of the responses to the questionnaire is that respondents identified the reference time period to which the questions refer as being present or, in other cases, up to a year prior to the survey administration.

About one in two, or slightly less than half, of the respondents (48.7%) indicated that they had never had a drink containing alcohol. This proportion increased from the 43.6% reported in the 2010 survey. About three in 10 women (30.7%) indicated use 'monthly or less' (32.0% in 2010); 12.2% said they drank alcohol four to five times a month (15.7% in 2010); and 8.4% indicated having a drink containing alcohol between 'two or three times a week', a slight increase from the 8.1% recorded in 2010.

Drinking Frequency	Respondents	
	n	%
Never	116	48.7
Monthly or less	73	30.7
2 to 4 times a month	29	12.2
2 to 3 times a week	20	8.4
Total	**238**	**100.0**

When asked about "How many drinks containing alcohol do you have on a typical day when you are drinking?", 88 women (37.0%) said '1 or 2'; a further 18 (7.6%) said '3 or 4'; and 10 respondents (4.2%) indicated they drank '5 or 6' such drinks. One result is significantly different from that reported in 2010, where 71.3% (n = 67) said they drank '3 or 4' drinks.

Number of Drinks	Respondents	
	n	%
1 or 2	88	37.0
3 or 4	18	7.6
5 or 6	10	4.2
7, 8, or 9	1	0.4
Not Stated	5	2.1
Total	**122**	**51.3**

Hazardous alcohol intake *is defined as a level of consumption or pattern of drinking which, if it persists, is likely to result in harm.*

Harmful alcohol intake *is defined as that causing harm to the psychological or physical well-being of the individual.*

Binge-drinking *is defined as drinking more than six drinks on one occasion.*

Binge Drinking

To estimate the prevalence of binge drinking, respondents were asked 'How often do you have six or more drinks on one occasion'. Slightly more than one-third (35.3% or 84), or one in three women, indicated that they never engage in binge drinking. In contrast, 34 women indicated that they do consume six or more drinks on one occasion. This would suggest a binge-drinking rate of 14.3%; a marked decline of about one and a half times the one-fifth or 21.0% (n = 35) observed in 2010. This further means that there is a strong likelihood of hazardous or harmful alcohol consumption by at least 14.3% of the women surveyed.

Binge Drinking	Respondents	
	n	%
Never	84	35.3
Less than monthly	24	10.1
Monthly	10	4.2

Binge Drinking and Gestation Period

Among those pregnant women identified as binge-drinkers (n = 34), 23.5% were in their first trimester of pregnancy, 41.2% in the second, and 35.3% were in their third trimester. This is equivalent to 3.4%, 5.9%, and 5.0% of all surveyed pregnant women, respectively, by trimester.

Binge Drinking	Trimester					
	1st		2nd		3rd	
	n	%	n	%	n	%
Yes	8	23.5	14	41.2	12	35.3
No*	12	14.3	33	39.3	36	42.9

** Three (3.6%) women of those who responded 'No' did not indicate their gestation period.*

The age among those considered as binge drinkers ranged from 20 to 49 years but most prevalent among the 30-34 year age group (38.2% of binge drinkers or 5.5% of all respondents).

Only one participant indicated that someone was injured as a result of her drinking within the past year.

Drinking and Pregnancy

The participants who reported that they consume alcohol were asked if they have done so since becoming pregnant. There were about three in 10 such respondents (32.0% or 39); equivalent to 16.4% of all survey respondents who said that they have had a drink containing alcohol since being pregnant.

	Had a drink containing alcohol since pregnant (n = 122)		Stopped drinking because of pregnancy (n = 122)	
	n	%	n	%
Yes	39	32.0	91	74.6
No	81	66.4	30	24.6
Not Stated	2	1.6	1	0.8

At the same time, about one-quarter or one in four persons who reported to have consumed alcohol (24.6% or 30) indicated that they did not stop drinking because they became pregnant. This is equivalent to 12.6% of the total number of respondents.

Interpretation of the AUDIT Scores

A look at the AUDIT scores (total score on Questions 1 to 10 on the questionnaire), showed that 2.0% (n = 5) of the pregnant women scored eight or more; indicating hazardous or harmful alcohol use, as well as possible alcohol dependence. The total AUDIT score reflects a patient's level of risk related to alcohol. Higher scores simply indicate greater likelihood of hazardous and harmful drinking. However, such scores may also reflect greater severity or risk of alcohol problems and dependence, as well as a greater need for more intensive treatment.

Criteria[2]		Respondents	
		n	%
Overall AUDIT Score			
Low Risk	Q1 – Q10 (score of 0 to 7)	111	46.6
High Risk	Q1 – Q10 (score of 8 or more)	5	2.0
Hazardous Consumption Level	Q2 – Q3 (score of 1 or more)	42	17.6
Alcohol Dependence	Q4 – Q6 (score of 1 or more)	7	2.9
Alcohol-Related Harm	Q7 – Q10 (score of 1 or more)	19	8.0
Past Alcohol Problem	Q9 - Q10 (score of 1 or more)	3	1.3

[2] T. F. Babor, J. C. Higgins-Biddle, J. N. Saunders, M. G. Monteiro. (2001). *The Alcohol Use Disorders Identification Test. Guidelines for Use in Primary Care. Second Edition.* World Health Organisation: Department of Mental Health and Substance Abuse Dependence.

A more detailed interpretation of the patients' total score may be obtained by determining on which questions points were scored. In general, a score of one or more on Question 2 or Question 3 indicates consumption at a hazardous level. The results showed that 17.6% (n = 42) of the pregnant women reported a hazardous level of alcohol consumption.

Points scored above zero on Questions 4 to 6 (especially weekly or daily symptoms) imply the presence or onset of alcohol dependence. There were 2.9% of the respondents (n = 7) whose scores on these questions would suggest the emergence or presence alcohol dependence.

Points scored on Questions 7 to 10 indicate that alcohol-related harm is already being experienced. The scores on these questions reflect that 8.0% of the participants (n = 19) were in this state.

Scores on Questions 9 and 10 were reviewed to determined whether patients gave evidence of a past problem (that is, 'yes, but not in the past year'). Even in the absence of current hazardous drinking, positive responses on these items should be used to discuss the need for vigilance by the patients. There were only 1.3% (n = 3) patients who fell within this category.

TOBACCO USE

The results showed that, overall, 8.4% of the pregnant women surveyed (n = 20) indicated that they used tobacco (cigarette or some other form of tobacco product) in the past year (prior to being surveyed). However, a much smaller proportion (2.5% or n = 6) of pregnant women reported being current users, that is, used cigarettes in the 30-day period prior to the survey.

Among the current tobacco users, two-thirds (66.7% or n = 4) indicated that they were pregnant before compared to 33.3% (n = 2) who were having their first pregnancy. Similarly, 50.0% or one-half (n = 3) were in their first trimester and the remaining were either in their second or third trimester. This, therefore, means that there were a few persons who did smoke while pregnant.

	Annual Use (Past Year)				Current Use (Past 30 Days)			
	Yes		No		Yes		No	
Total	**20**	**100.0**	**215**	**100.0**	**6**	**100.0**	**227**	**100.0**
Age Group								
15 – 19	1	5.0	4	1.9	-	-	5	2.2
20 – 24	1	5.0	15	7.0	-	-	15	6.6
25 – 29	7	35.0	47	21.9	1	16.7	53	23.3
30 – 34	7	35.0	87	40.5	3	50.0	90	39.6
35 – 39	1	5.0	48	22.3	-	-	49	21.6
40+	3	15.0	11	5.1	2	33.3	12	5.3
Gestation (Trimester)								
1st	4	20.0	31	14.4	3	50.0	31	13.7
2nd	8	40.0	83	38.6	1	16.7	90	39.6
3rd	8	40.0	97	45.1	2	33.3	102	44.9
Parity (First Pregnancy)								
Yes	8	40.0	86	40.0	2	33.3	91	40.0
No	12	60.0	126	58.6	4	66.7	133	58.6

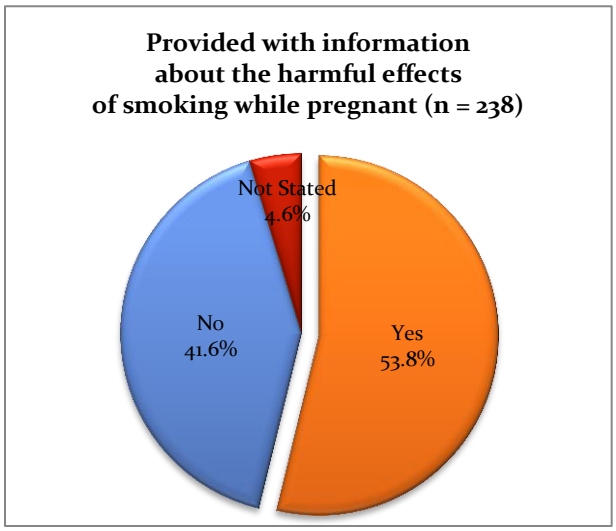
Where numbers and percentages do not add up to the referenced totals mean that the difference is accounted for by not stated responses.

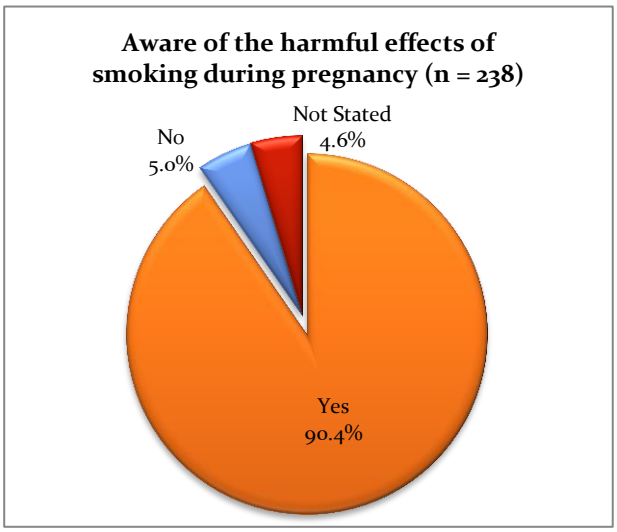
For those respondents who indicated cigarette use in the past year (n = 20), the reported frequency of smoking less than one cigarette a day accounted for 1.3% of all participants; two to five cigarettes a day was 2.9%; six to 10 cigarettes a day was 2.5%; and more than 10 cigarettes a day was 1.3%. At the same time, there were 2.9% (n = 7) and 1.3% (n = 3) of women who said "yes, I sometimes feel like having a cigarette first thing' and 'yes, I always feel like having a cigarette first thing', respectively.

Overall, there were 14 women who smoked cigarettes in the past year but did not smoke in the past 30 days. Further, respondents were asked if they had stopped smoking because they became pregnant and 6.3% of all participants or 75.0% (n = 15) of those who indicated use of cigarettes in the past year, reported a cessation of smoking because of becoming pregnant. The majority of the women who stopped smoking were currently in their third trimester while there were still a few who were in their first and second trimesters.

Knowledge and Perception of Harm

Slightly over half of the respondents (53.8%) indicated that their doctor or other health provider had discussed with them the harmful effects of smoking cigarettes since becoming pregnant. This, therefore, means that there were about four in 10 pregnant women (41.6%) who indicated that they had not been cautioned about the harmful effects of smoking by their doctor or other health provider.

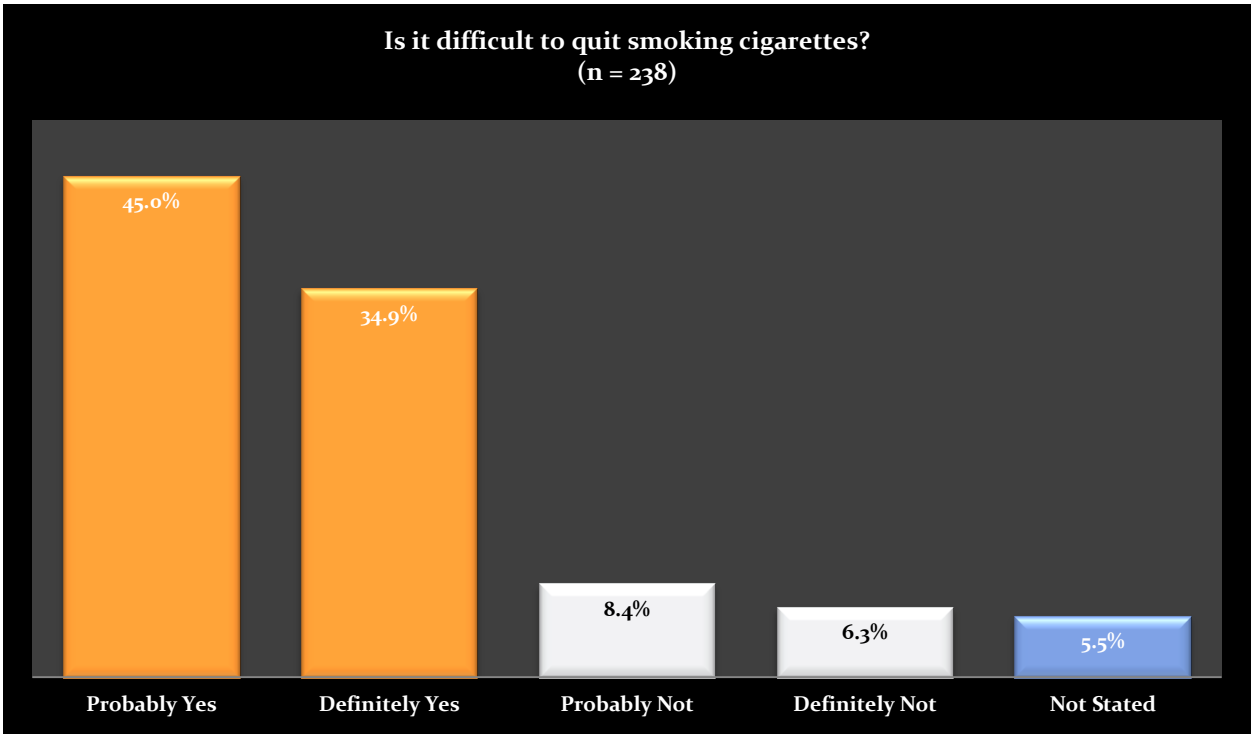




Nonetheless, the majority (90.3%) of pregnant women indicated that they were aware of the harmful effects of smoking during pregnancy. At the same time, when asked of their perception of cigarette smoking to their health, a large proportion of women (89.1%) reported that they definitely think that this habit is harmful. A seemingly small proportion (4.6%), but important nevertheless, thought that smoking was 'definitely not' harmful to their health.

Perception of Quitting Smoking

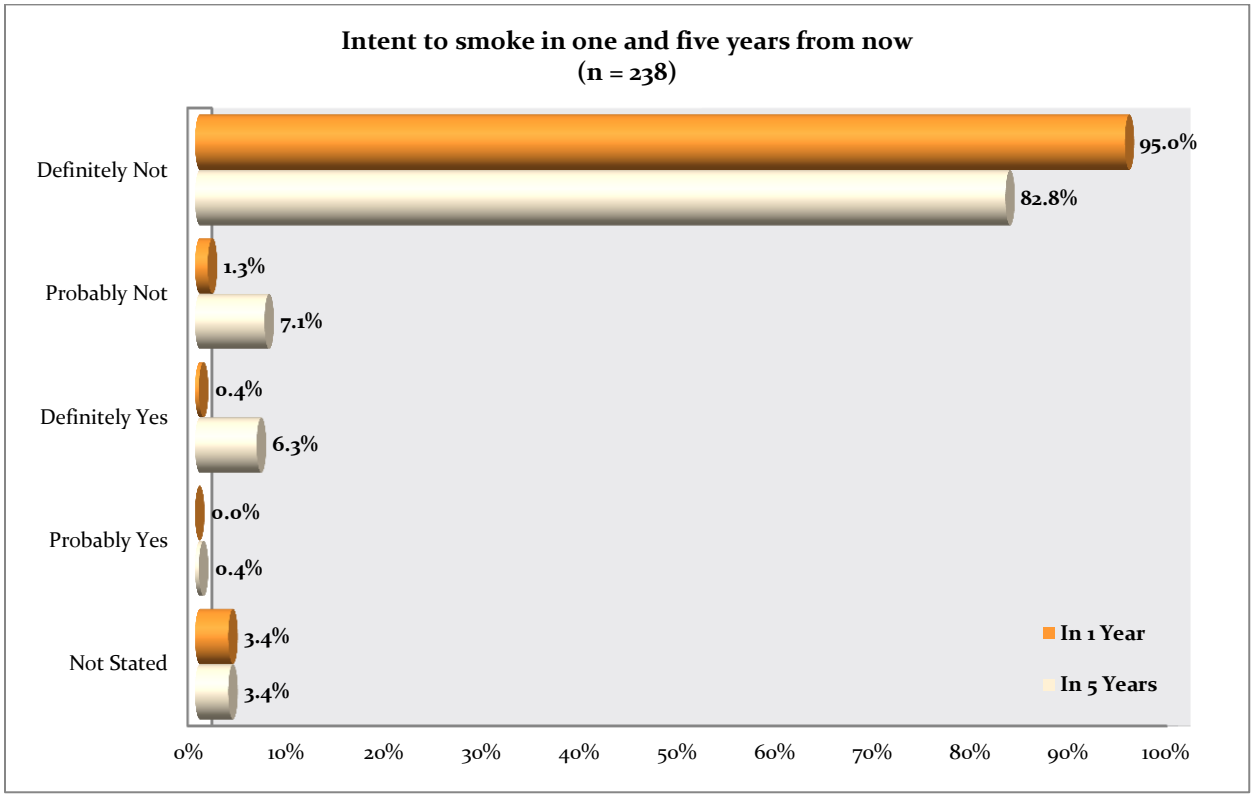
Respondents were asked if they thought it would be difficult for someone to quit smoking once they had started. In response, slightly over one-third (34.9%) said 'definitely yes' and 45.0% said 'probably yes'. On the other hand, 6.3% of the participants did not think it would be difficult at all, and an additional 8.4% said it would 'probably not' be difficult.



Intention to Smoke

No one indicated an intention to smoke at any time during the next year. For the most part, the majority (95.0%) of respondents' stated intention was 'definitely not' to smoking cigarettes in the within the next 12 months.

In comparison, the intention to not smoke cigarettes dropped to 82.8% of the respondents when the reference period changed to 'five years from now'. As such, there were more respondents who indicated 'definitely yes' to smoking in five years' time, moving from 0.4% in one year to 6.3% in five years.

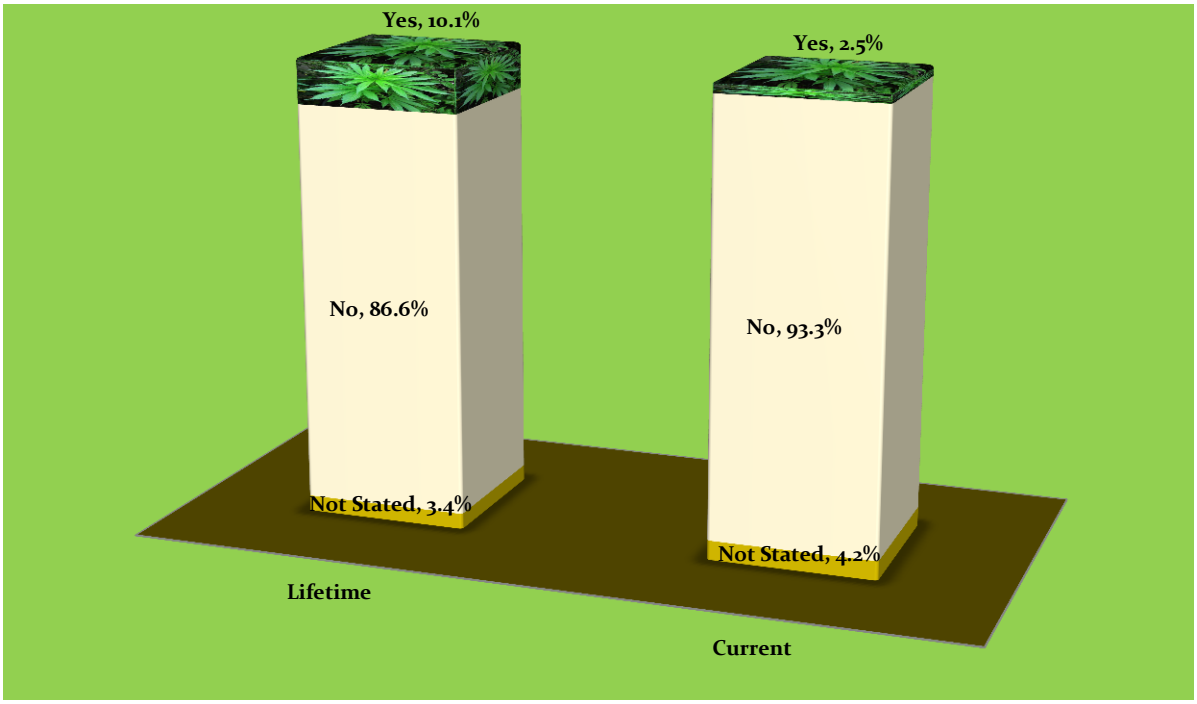


The risk of a woman, who had stopped smoking because she became pregnant and with intentions of starting again, is almost nonexistent in that none of the persons who ceased smoking on account of pregnancy indicated the possibility of doing so in a year or five years' time. At the same time, there was only one person who indicated smoking in the current period and who also indicated the definite possibility of smoking a year and five years' time.

MARIJUANA USE

The survey respondents were asked if they had used marijuana in the past year (annual use) and in the past month (current use). About one in 10 (10.1%) women reported annual use of marijuana; while 2.5% indicated current use.

Annual and Current Use of Marijuana (n = 238)



Of those (n = 24) who reported the use of marijuana in the past year, most (n = 15) were between the ages of 20 to 29 years; equal numbers (n = 9) were currently in their second and third trimester with a few (n = 5) reporting that they were in their first trimester. For many (n = 14) this was not their first pregnancy. It is possible that those who indicated use of marijuana in the past year have used it sometime before they became pregnant.

In the current or past month reference period, six persons reported used of marijuana; implying that 18 persons who smoked in the past 12 months no longer smoked in the past one month. Of the current marijuana users (n = 6), two person each were in their first, second, and third trimester, respectively; with four persons reporting that current pregnancy is not their first. Four of the current marijuana users were in their 20_s while the other two were in their 30_s. This, therefore, means that there were a few persons who are currently using marijuana while being pregnant (at least those in their second and third trimesters).

DISCUSSION

Drinking Alcohol during Pregnancy

The total AUDIT score, consumption level, signs of dependence and present harm all should play a role in determining how to manage a patient. In most cases the total AUDIT score will reflect the patient's level of risk related to alcohol. In general health care settings, most patients will score under the cut-offs and may be considered to have low risk of alcohol-related problems as was evident from the results of this survey. A smaller, but still significant, segment of the targeted population scored above the cut-offs but recorded most of their points on the first three questions. A much smaller proportion scored very high, with points recorded on the dependence-related questions as well as exhibiting alcohol-related problems. As yet there has been insufficient research to establish precisely a cut-off point to distinguish hazardous and harmful drinkers (who would benefit from a brief intervention) from alcohol dependent drinkers (who should be referred for diagnostic evaluation and more intensive treatment). This is an important question because screening programmes designed to identify cases of alcohol dependence are likely to find a large number of hazardous and harmful drinkers if the cut-off of 8 is used. These patients need to be managed with less intensive interventions. In general, the higher the score on the AUDIT, the greater the sensitivity in finding persons with alcohol dependence. For those participants who scored between 8 and 15 it is most appropriate for simple advice focused on the reduction of hazardous drinking be provided, especially given their pregnancy status.

Drinking alcohol during pregnancy can cause physical and mental birth defects. At least half of all pregnancies are unplanned, and thus an estimated one quarter of all newborns (about 100,000 infants in a year in Canada) is exposed to some alcohol during early gestation.[3] Although many women are aware that heavy drinking during pregnancy can cause birth defects, many do not realize that moderate—or even light—drinking also may harm the foetus. In fact, no level of alcohol use during pregnancy has been proven safe.

When a pregnant woman drinks, alcohol passes swiftly through the placenta to her baby. In the unborn baby's immature body, alcohol is broken down much more slowly than in an adult's body. As a result, the alcohol level of the baby's blood can be even higher and can remain elevated longer than the level in the mother's blood. This sometimes causes the baby to suffer lifelong damage. Counselling of women who drink small amounts of alcohol before realising they had conceived is a complex but important task, especially given that 16.4% of the respondents (or 32.0% of the alcohol users) said that they still drank alcohol since finding out they were pregnant. It is clear from research that substantial prenatal exposure, either heavy daily or weekend binge drinking, is often seen in children diagnosed with classic FAS.

[3] K. Gideon, I. Nulman, A. E. Chudley, & C. Loocke. (2003). Fetal alcohol spectrum disorder. *Canadian Medical Association Journal, 169*(11), 1181-1185, p. 1183.

What are the hazards of drinking alcohol during pregnancy?

The National Institute on Alcohol Abuse and Alcoholism has suggested that FAS prevalence in the general population of the U.S. can now be estimated to be between 0.5 and 2 per 1,000 births.[4] FAS occur in about 6.0% of the babies born to women who are alcoholics or chronic alcohol abusers. These women either drink excessively throughout pregnancy or have repeated episodes of binge drinking. The exact amount of alcohol that causes this condition is unknown, although binge drinking is known to be particularly harmful. Foetal alcohol syndrome, however, is a rare condition, which only occurs if there is persistent alcohol consumption during pregnancy.

FAS is one of the most common known causes of mental retardation, and the only cause that is entirely preventable. Babies with classic FAS are abnormally small at birth and usually do not catch up on growth as they get older. They may have small eyes, a short or upturned nose and small, flat cheeks. Their organs, especially the heart, may not form properly. Many babies with FAS also have a brain that is small and abnormally formed, and most have some degree of mental disability. Many have poor coordination and a short attention span and exhibit behavioral problems. The effects of FAS last a lifetime. Even if not mentally retarded, adolescents and adults with FAS have varying degrees of psychological and behavioral problems and often find it difficult to hold down a job and live independently.

What other problems can be caused by drinking alcohol?

Consuming alcohol during pregnancy increases the risk of miscarriage, low birth-weight and stillbirth. Heavy drinkers are two to four times more likely to have a miscarriage between the fourth and sixth months of pregnancy than are nondrinkers. A recent Danish study found that women who drank five or more drinks a week were three times more likely to have a stillborn baby than women who had less than one drink a week.[5]

Smoking during Pregnancy

According to the World Health Organization, about 20% of women in developed countries and about 9% in developing countries smoke.[6] Many of these women smoke while they are pregnant. This is a major public health problem because, not only can smoking harm a woman's health, but smoking during pregnancy can lead to pregnancy complications and serious health problems in newborns. Cigarette smoke contains more than 2,500 chemicals. It is not known for certain which of these chemicals are harmful to a developing baby. However, both nicotine and carbon monoxide are believed to play a role in causing adverse pregnancy outcomes.

[4] P. May, & P. Gossage, P. (2001). Estimating the prevalence of fetal alcohol syndrome: A summary. *Alcohol Research and Health, 25*(3), 159-167, p. 160.

[5] J. Henderson, R. Gray, & P. Brocklehurst. (2007). Systematic review of effects of low–moderate prenatal alcohol exposure on pregnancy outcome. *International Journal of Obstetrics & Gynaecology, 114*(3), 243-252, p. 250.

[6] J. Mackay & M. Eriksen. *The Tobacco Atlas 2002.* World Health Organisation. p. 26.

How can smoking harm the newborn?

Experts have warned that tobacco smoking by pregnant women may adversely affect the developing fetus. The more a pregnant woman smokes, the greater the risk to her baby. Smoking while being pregnant causes chemical changes to the DNA of a foetus detectable from as early as 12 weeks and may predispose children born to smokers to a range of health conditions which last throughout life. It is linked to numerous negative outcomes, including low birth weight, sudden infant death syndrome (SIDS), and increased risk for attention deficit disorder, conduct disorder, and nicotine use in offspring. It also confirms previous research that babies born to moms who smoked when pregnant have an increased risk of nicotine addiction in adulthood.

Smoking nearly doubles a woman's risk of having a low-birth-weight baby. In 2002, 12.2 percent of babies born to smokers in the United States were of low birth-weight (less than 5½ pounds), compared to 7.5 percent of babies of nonsmokers.[7]

Low birth-weight (weight of a newborn measured immediately after birth which of less than 5.5 pounds, or 2500 grams) can result from poor growth before birth, preterm delivery or a combination of both. Smoking has long been known to slow fetal growth. Studies also suggest that smoking increases the risk of preterm delivery (37 weeks of gestation). Premature and low-birth-weight babies face an increased risk of serious health problems during the newborn period, chronic lifelong disabilities (such as cerebral palsy, mental retardation and learning problems) and even death.

However, if a woman stops smoking by the end of her first trimester of pregnancy, she is no more likely to have a low-birth-weight baby than a woman who never smoked. Even if a woman has not been able to stop smoking in her first or second trimester, stopping during the third trimester can still improve her baby's growth.

Marijuana Use during Pregnancy

Current evidence indicates that cannabis use both during pregnancy and lactation, may adversely affect neurodevelopment, especially during periods of critical brain growth both in the developing fetal brain and during adolescent maturation, with impacts on neuropsychiatric, behavioural, and executive functioning. These reported effects may influence future adult productivity and lifetime outcomes.

The foetus of a pregnant woman who uses marijuana becomes exposed to this substance via the placenta (the source of the baby's food and oxygen during pregnancy), through the umbilical cord, and into the baby's bloodstream. Marijuana smoked by a pregnant woman remains in the

[7] J. Martin, B. Hamilton, P. Sutton, S. Ventura, F. Menacker, & M. Munson. (2003). Births: Final data for 2002. *National vital statistics reports,* 52 (10), 1-113, p. 2.

baby's fat cells for seven to 30 days and may alter the normal processes and trajectories of brain development.

Smoking marijuana can affect the amount of oxygen and nutrients the baby receives, which may affect growth. Research has shown that some babies born to women who used marijuana during their pregnancies display altered responses to visual stimuli, increased tremulousness, and a high-pitched cry; which may indicate problems with neurological development. During the preschool years, marijuana-exposed children have been observed to perform tasks involving sustained attention and memory more poorly than their non-exposed counterparts. In the school years, these children are more likely to exhibit deficits in problem-solving skills, memory, and the ability to remain attentive.

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APPENDIX 1: QUESTIONNAIRE

PATIENT: Alcohol and drug use can affect your health and can interfere with certain medications and treatments. It is therefore important that we ask some questions about your use of alcohol, tobacco (cigarette), and marijuana. Your answers will remain confidential so please be honest. Place a tick (√) in the one box that best describes your answer to each question.

I: The Alcohol Use Disorders Identification Test (AUDIT)

1. How often do you have a drink containing alcohol?
0 □ never **[Go to Section II]**
1 □ monthly or less
2 □ 2 to 4 times a month
3 □ 2 to 3 times a week
4 □ 4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
0 □ 1 or 2
1 □ 3 or 4
2 □ 5 or 6
3 □ 7, 8, or 9
4 □ 10 or more

3. How often do you have six or more drinks on one occasion?
0 □ never
1 □ less than monthly
2 □ monthly
3 □ weekly
4 □ daily or almost daily

4. How often during the last year have you found that you were not able to stop drinking once you had started?
0 □ never
1 □ less than monthly
2 □ monthly
3 □ weekly
4 □ daily or almost daily

5. How often during the last year have you failed to do what was normally expected of you because of drinking?
0 □ never
1 □ less than monthly
2 □ monthly
3 □ weekly
4 □ daily or almost daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
0 □ never
1 □ less than monthly
2 □ monthly
3 □ weekly
4 □ daily or almost daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
0 □ never
1 □ less than monthly
2 □ monthly
3 □ weekly
4 □ daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?
0 □ never
1 □ less than monthly
2 □ monthly
3 □ weekly
4 □ daily or almost daily

9. Have you or has someone else been injured as a result of your drinking?
0 □ no
2 □ yes, but not in the last month
4 □ yes, during the last year

10. Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down?
0 □ no
2 □ yes, but not in the last month
4 □ yes, during the last year

11. Have you had a drink containing alcohol since you have been pregnant?
0 □ no 1 □ yes

12. Did you stop drinking because you became pregnant?
0 □ no 1 □ yes

II. Tobacco and Marijuana Use Identification Test

1. During the **<u>past year</u>** have you used any form of tobacco or marijuana products?
a) Tobacco 0 □ no 1 □ yes
b) Marijuana 0 □ no 1 □ yes

2. During the **<u>past year</u>** on the days you smoked, how many cigarettes did you usually smoke?
0 □ I did not smoke during the past year
1 □ less than one cigarette a day
2 □ one cigarette a day
3 □ 2-5 cigarettes a day
4 □ 6-10 cigarettes a day
5 □ more than 10 cigarettes a day

3. During the **<u>past 30 days</u>** have you used any form of tobacco or marijuana products?
a) Tobacco 0 □ no 1 □ yes
b) Marijuana 0 □ no 1 □ yes

4. During the **<u>past 30 days</u>** on the days you smoked, how many cigarettes did you usually smoke?
0 □ I did not smoke during the past 30 days
1 □ less than one cigarette a day
2 □ one cigarette a day
3 □ 2-5 cigarettes a day
4 □ 6-10 cigarettes a day
5 □ more than 10 cigarettes a day

5. Did you stop smoking because you became pregnant?
0 □ never smoked 1 □ no 2 □ yes

6. Do you ever have a cigarette or feel like having a cigarette first thing in the morning?
0 □ I have never smoked a cigarette
1 □ I no longer smoke cigarettes
2 □ no, I do not feel like having a cigarette first thing
3 □ yes, I sometimes feel like having a cigarette first thing
4 □ yes, I always feel like having a cigarette first thing

7. Are you aware of the harmful effects of smoking especially during pregnancy?
0 □ no 1 □ yes

8. Do you think cigarette smoking is harmful to your health?
0 □ definitely not
1 □ probably not
2 □ probably yes
3 □ definitely yes

9. Has your doctor or any other health provider discussed the harmful effects of smoking with you since pregnant?
0 □ no 1 □ yes

10. At any time during the next 12 months do you think you will smoke a cigarette?
0 □ no 1 □ yes

11. Do you think you will be smoking cigarettes five years from now?
0 □ definitely not
1 □ probably not
2 □ probably yes
3 □ definitely yes

12. Do you think it would be difficult for someone to quit smoking once they had started?
0 □ definitely not
1 □ probably not
2 □ probably yes
3 □ definitely yes

III: Demographics

1. How old are you? [ ][ ] years

2. How many weeks pregnant are you? [ ][ ] weeks

3. Is this your first pregnancy?
0 □ no 1 □ yes

THANKS FOR YOUR COOPERATION!

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