SURVEY OF **PREGNANT WOMEN**

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

2025

GOVERNMENT OF BERMUDA
Department for National Drug Control

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SURVEY HIGHLIGHTS

Alcohol

» Women indicated having a drink containing alcohol monthly or less (21.7%).
» Nearly seven in ten (68.3%) respondents reported drinking 1 or 2 alcoholic beverages on a typical day.
» A small proportion of women (5.0%) stated that they or someone else had been injured as a result of their drinking, but not in the last month.
» Almost one in six (15.0%) women had an alcoholic beverage since they became pregnant, while a small number (n=10) reported that they did not stop drinking when becoming pregnant.
» There was a strong likelihood of hazardous or harmful alcohol consumption related to binge-drinking, with 18.4% of women noting that they have six or more alcoholic drinks on one occasion.
» Slightly over one in ten (11.7%) women reported that they had been a passenger in a car driven by someone who had been drinking alcohol. On the other hand, no one reported this behavior in relation to being a passenger on a bike.

Tobacco/Marijuana

» There were a small proportion of annual smokers of cigarettes (10.0%) and a larger proportion of annual marijuana users (23.3%).
» Nearly one in five (18.3%) respondents indicated that they quit cigarette smoking because they became pregnant.
» From a public health point of view, nearly half (46.7%) of the women reported that their doctor or other health professional had discussed the harmful effects of smoking with them since becoming pregnant.
» A considerably high proportion (91.7%) of women reported that they were aware of the harmful effects of smoking during pregnancy.
» There was a small proportion (1.7%) of women who indicated that they sometimes feel like having a cigarette first thing in the morning.
» Most women (95.0%) thought that smoking cigarettes was definitely (definitely yes)harmful to one's health.
» Only 1.7% of women who had stopped smoking cigarettes indicated an intent to continue doing so in the short-term, whereas no one reported intent to do so in the long-term.

In terms of smoking cessation, most women (95.0%) expressed that it would be difficult to quit smoking once started.

Vaping

» There were 10 or 16.7% of women who reported that they had used an electronic vaping device (i.e., e-cigarette, electronic nicotine products, or hookah) in their lifetime.
» During the three months before becoming pregnant, on average, 8.3% of women noted that they used an e-cigarette or other electronic nicotine product from one day a week or less to 2-6 days a week.

INTRODUCTION

This synopsis report presents information from the Survey of Pregnant Women, which consisted of two parts: the Alcohol Use Disorders Identification Test (AUDIT) and an evaluation of tobacco and marijuana use among pregnant women who sought prenatal care at their physician (Obstetrician-Gynecologist [OB-GYN] or General Practitioner [GP] providing antenatal care) during the three weeks of September 8th to September 30th, 2025. This is the fifth survey of this kind conducted among pregnant women in Bermuda, following previous surveys being administered in 2005, 2009, 2015, and 2020.

Purpose

The underlying reason for this survey is to heighten awareness that alcohol, tobacco and marijuana use during pregnancy increases the risk of adverse pregnancy outcomes. Another purpose of this survey was to continue monitoring the prevalence of use of alcohol, tobacco, and marijuana, along with vaping, among pregnant women and evaluate any changing trends, within this demographic.

About the Survey

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 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. Questions related to marijuana use were also included in this section. With an increasing concern around the negative impacts of the newer phenomena of vaping via e-cigarettes or other electronic products, there were four questions added to the questionnaire in this regard. These questions, located at the end of the tobacco section, allowed greater insight to be obtained into the use of these electronic smoking devices amongst pregnant women in Bermuda.

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.

Survey Limitations

During this round of the survey, practice liaisons were reminded of the issues that arose from the previous survey undertaking in 2020, with the intent of proactively ensuring they know what to do if they are faced with similar issues again. In noting that, the only challenge that was identified was clarifying the confusion regarding the terms "the last 12 months" and "the last 30 days." To address this limitation, a communiqué was sent to each practice liaison with a detailed explanation of the difference between the timeframes.

METHODOLOGY

Survey Design

The Survey of Pregnant Women 2025 was administered over three weeks, from Monday, September 8th to Tuesday, September 30th, to all pregnant women presenting for prenatal care at their obstetrician and gynecologist (OB-GYN). The survey design is briefly described in the sections below.

Population Coverage and Participants

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 weeks of survey administration. Specifically, seven private obstetricians or gynecologists were contacted along with the government-funded clinic, and five agreed to participate during this round of the survey (see Appendix B).

Sampling

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

Data Collection

During the planning process, in August, the respective practices were informed of the opportunity to collaborate on the Survey for Pregnant Women 2025. Practice liaisons were established and they, along with the doctors, were formally notified of the scheduled survey, the time requirements, and were asked to inform the DNDC of their participation. There were 5 of the 7 private practices, along with the Maternal Health clinic, that indicated their interest in being a part of this initiative.

Data collection for the survey was carried out from Monday, September 8th – to Tuesday, September 30th; with all participating OB-GYN offices completing the survey during this designated period. For this survey undertaking, the DNDC updated the data collection method from the traditional paper and pencil method to completion online via laptops using a designated Survey Monkey link. Each office liaison gave the patient a 'Client Information Sheet' that gave information about the survey and allowed them to agree/ disagree to participate. Upon agreeing, the patient could complete the survey on a laptop, which was given to each office, or scan a QR code to complete the survey via their mobile device. These surveys were completed while waiting to be seen by the physician (typically in the waiting room). If the electronic options were not available, practice liaisons (the receptionist or the nurse) were equipped with paper and pencil questionnaires to distribute to the patient.

The questionnaire took approximately five to 10 minutes to complete. Participation was voluntary, though it was encouraged. There were 17 noted refusals at the practices. Respondents' participation or refusal in no way affected the care that the patients received.

Supervision and Control

The project team for the survey consisted of staff from the DNDC, who worked closely with an assigned contact person (practice liaison) from within each OB-GYN office. The DNDC was mainly responsible for planning the survey, ensuring the links were loaded onto the laptops, printing the paper questionnaires, providing logistical assistance to practice liaisons, analysing the survey results, and preparing the survey report. In addition, practice liaisons were given verbal instructions on the expectations for survey administration in the event that patients had any issues with responding to the survey questions. This ensured a uniform approach in the responses given to patients across the different practices for the same questions.

Questionnaire Design

Instrument

The survey instrument consists of three sections that cover different aspects of pregnant women's use of alcohol, tobacco and marijuana among pregnant women who sought prenatal care from their physician (Obstetrician-Gynecologist [OB-GYN] or General Practitioner [GP] providing antenatal care) in Bermuda. The instrument consists of 33 questions. The actual wording of the questions and response options is included in Appendix A of this report.

The sections covered in the questionnaire are:

1. The Alcohol Use Disorders Identification Test (AUDIT) - consists of 10 questions, plus two other questions on alcohol use and one on harmful behavior in relation to being in a vehicle with someone who had been under the influence of alcohol while pregnant.
2. Tobacco and Marijuana Use Identification Test- consists of 12 questions on tobacco and marijuana use and perceptions, plus five questions on the use of electronic cigarette devices.
3. Demographics- consists of three questions

The questions were adopted from the Alcohol Use Disorders Identification Test (AUDIT), a standardised tool of the WHO's Department of Mental Health and Substance Dependence; 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 people 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 17 questions that sought to identify the respondents' consumption patterns and their perception of harm and intentions to use tobacco (cigarettes) and marijuana, whether by way of an electronic vaping device or not, in the future.

Non-sampling errors were minimised by including skip instructions, which allowed patients to skip questions automatically that were not to be responded to if they were irrelevant. This method enhanced the timeliness of data collection and the accuracy of the data. All of the questionnaire items were pre-coded.

Survey Administration

Consent

Respondents' participation in the survey was voluntary. 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. Each patient was required to consent to their participation in the survey, which was done so through selecting 'agree or disagree' on the Client Information Sheet. A letter was sent to each practice liaison explaining the purpose of the survey, the anonymity and confidentiality of the patient's participation, that non-participation will not affect their doctor's appointment, among other relevant information. Practice liaisons had one week in which to return, via email, the consent to participate in the survey.

Pre-Administration

Patient numbers were received from each office to obtain an accurate count for the collation of survey materials, such as a laptop, a small number of paper questionnaires, pencils, and Client Information Forms. All survey materials (control forms and instructions for survey administrators) were collated into individual boxes and were delivered to the doctor's offices before the scheduled survey administration date.

Administration

Upon check-in to the doctor's office, each obstetrics patient was given a Client Information Sheet, on which they consented or did not to their participation in the survey. Upon agreeing to participate, the patient was given the option to complete the survey either on the laptop via Survey Monkey or by scanning the QR code to complete on their mobile device. The survey required approximately 5 minutes to complete and was done so in the waiting room while the patient was waiting to be called in for their appointment.

Both the liaison and the instructions at the top or on the front of the questionnaire assured patients that the survey was anonymous and confidential. Once the survey was completed, the practice liaison ensured that the patient had submitted their questionnaire if it was completed on the laptop, and that signaled the end of the data collection process. Cooperation was good across all the participating doctors' offices. At the end of the survey administration period, the contact person ensured that all the survey materials were packed in the initial box given for resubmission to the DNDC.

Post Administration

The boxes were uplifted by the DNDC, and a staff member checked the contents against what was signed off in relation to what was written on the Transmittal Form. All surveys were completed online, which eliminated the need for data entry.

Data Quality

Response Rate

Of the target population, a total of 60 pregnant women responded to the survey, accounting for a response rate of 53.1%. There were 17 refusals across all the participating doctors' offices. The difference between the original patient numbers given versus those who responded was mainly because the original numbers were estimates. For this survey, patients were only to complete one survey each.

Validation

During this undertaking, all surveys were completed online using the Survey Monkey platform. This platform has built-in skip instructions that minimize errors in question responses. All responses were directly input into the online questionnaire, and as such, the ability to validate responses was not required.

Missing Data

For instances of missing data, imputations were not made as it would be difficult to assign responses based on self-reports. Hence, missing data was treated as "no answer" or "not stated" and forms part of the total response.

Data Processing

Responses to the survey questions were captured directly into the online questionnaire by the respondents. Steps were taken to ensure confidentiality and reliability of the process and outcome. The process spanned approximately 1 week (one day to download the data from Survey Monkey into a PDF and SPSS file; two days for ensuring the data dictionary was updated; and two days for documentation of the data entry steps and anomalies). Data processing was completed in SPSS. The DNDC staff member then performed the data analyses for this report. This included the generation of appropriate tables and descriptive statistics for inclusion in this final report.

Data Analysis

For the purpose of this report, analyses of the survey results were done for each section of the questionnaire and were limited to descriptive analysis of the responses to all questions by the participants. Frequency of percentages were generated for all questions. The percentages can be interpreted as the proportion of pregnant women who feel a certain way about a statement or question. There are instances where a small number or proportion of pregnant women provided responses. As standard practice, questions containing less than 10 responses would not be reported as they do not provide meaningful information and are considered unstable from a statistical perspective. With the small number of responses received, for this survey, there was an exception made to the standard practice; to accommodate smaller numbers (the smallest number reported in tables is one).

Since majority of all pregnant women, who are currently under the care of an OB-GYN (5 out or the 7 offices), in Bermuda participated in this survey, this includes the full range of pregnant women surveyed. As such, the overall survey results can be interpreted as representing the attitudes and behaviours of the pregnant population.

The results are presented for the overall surveyed population and, in some instances, by a specific population characteristic, illustrated by using tables and charts accompanied by summary statements. IBM SPSS v. 23 software was used for the analysis of survey data. Charts were created in Microsoft Excel and tables, and text were prepared in Microsoft Word.

Confidentiality

All information provided by the patient 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

Demographic Profile of Survey Participants

A total of 60 persons participated in the survey; representing women presenting for prenatal care during the period September 8th to September 30th, 2025, and who completed the survey.

Overall, the number of responses represents pregnant women who were to be seen at participating 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 19 to 49 years. The average age of all survey respondents was 32.0 years. Most of the participants (38.3%) were between the ages 30 and 34 years. A significant proportion (62.0%), or just over six in 10, of the women surveyed were in their thirties. Pregnant teenagers account for 1.7% of all respondents, while women over 40 years account for 5.0%.

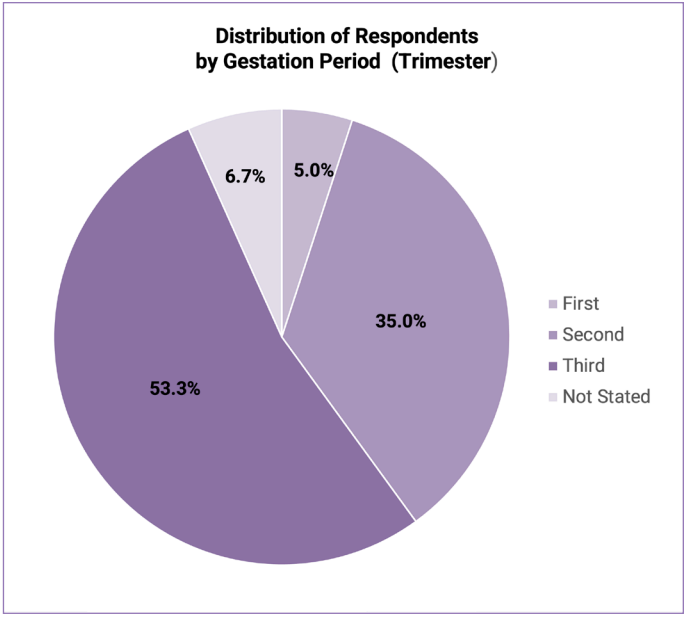
Age Group (Years)	Respondents	
	n	%
15 – 19	1	1.7
20 – 24	2	3.3
25 – 29	13	21.7
30 – 34	23	38.3
35 – 39	14	23.3
40+	3	5.0
Not Stated	4	6.7
Total	**60**	**100.0**

Gestation

Gestation is the period 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 the pregnancy is) 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 26. The third trimester of pregnancy spans from week 27 to the birth.

Most women surveyed (53.3%) were in their third trimester of pregnancy, while 35.0% were in their second trimester, followed by 5.0% of them who were in their first trimester.

Four women (6.7%) did not indicate their gestational period.



Age Group (Years)	Respondents by Trimester					
	1st		2nd		3rd	
	n	%	n	%	n	%
15 – 19	1	1.7	-	-	-	-
20 – 24	-	-	-	-	2	3.3
25 – 29	1	1.7	4	6.7	8	13.3
30 – 34	1	1.7	10	16.7	12	20.0
35 – 39	-	-	5	8.3	9	15.0
40+	-	-	2	3.3	1	1.7
Total	**3**	**5.0**	**21**	**35.0**	**32**	**53.3**

Note: There were 4 (6.7%) respondents who did not state a response to first pregnancy and age.

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 60 respondents, 53.3%, or one in two women, said 'Yes' while 40.0%, or about four in ten women, responded 'No'. A small proportion of respondents who were teenagers (1.7%) indicated that the current pregnancy was their first. Similarly, those women in the 25-34 age group reported that for most (40.0%), they have not had a previous pregnancy. Interestingly, there were 3.3.% of pregnant women 40 years or older who indicated that the current pregnancy was their first.

Respondents & First Pregnancy by Age Group

Age Group (Years)	Yes		No	
	n	%	n	%
15–19	1	1.7	–	–
20–24	1	1.7	1	1.7
25–29	10	16.7	3	5.0
30–34	14	23.3	9	15.0
35–39	4	6.7	10	16.7
40+	2	3.3	1	1.7
Total	**32**	**53.3**	**24**	**40.0**

Note: There were 4 (6.7%) respondents who did not state a response to first pregnancy and age.

Alcohol Use Disorders Identification Test (Audit)

This section of the report provides the survey findings by the following sub-sections: alcohol use disorders identification test (AUDIT), tobacco use, marijuana use, and vaping.

Consumption Patterns

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

Drinking Frequency	Respondents	
	n	%
Never	33	55.0
Monthly or less	13	21.7
2 to 4 times a month	10	16.7
2 to 3 times a week	2	3.3
4 or more times a week	2	3.3
Total	**60**	**100.0**

Just over half of the respondents (55.0%) indicated that they had never had a drink containing alcohol. This proportion increased from the 44.2% reported in the 2020 survey. About three in five women (21.7%) indicated use 'monthly or less' (21.7% in 2020); 16.7% said they drank alcohol two to four times a month (12.9% in 2020); 3.3% indicated having a drink containing alcohol between 'two to three times a week', a large decrease from the 12.5% recorded in 2020; and 3.3% indicated having a drink containing alcohol '4 or more times a week', a slight increase from the 1.3% reported in 2020.

When asked about "How many drinks containing alcohol do you have on a typical day when you are drinking", 41 women (68.3%) said '1 or 2'; a further 6 (10.0%) said '3 or 4'; 1 respondent (1.7%) indicated they drank '5 or 6' such drinks. One result is significantly different from that reported in 2020, where 14.3% (n = 32) said they drank '3 or 4' drinks.

Number of Drinks	Respondents	
	n	%
1 or 2	41	68.3
3 or 4	6	10.0
5 or 6	1	1.7
7, 8, or 9	-	-
10 or more	-	-
Not Stated	12	20.0
Total	**60**	**100.0**

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'. Roughly four in five (81.7% or 49), women indicated that they never engage in binge drinking. In contrast, 11 women indicated that they do consume six or more drinks on one occasion. This would suggest a binge-drinking rate of 18.4%; a slight decrease of 1.2 percentage points above the 19.6% (n=44) observed in 2020." This further means that there is a strong likelihood of hazardous or harmful alcohol consumption by at least 18.4% of the women surveyed.

Binge Drinking	Respondents	
	n	%
Never	49	81.7
Less than monthly	7	11.7
Monthly	4	6.7

Binge Drinking and Gestation Period

Among those pregnant women identified as binge-drinkers (n = 11), 18.2% were in their first trimester of pregnancy, 27.3% in the second, and 45.5% were in their third trimester. This is equivalent to 3.3%, 5.0%, and 8.3% of all surveyed pregnant women, respectively, by trimester.

Binge Drinking	Trimester					
	1st		2nd		3rd	
	n	%	n	%	n	%
Yes	2	18.2	3	27.3	5	45.5
No*	1	2.0	18	36.7	27	55.1

**Three women who responded 'No' did not indicate her gestation period.*

The age among those considered as binge drinkers ranged from 19 to 39 years but was most prevalent among the 30-34 (n=4) year age group (36.4% of binge drinkers or 6.7% of all respondents).

Three participants indicated that someone was injured because of her drinking; this occurrence did not happen in the last month.

Drinking and Pregnancy

The participants who reported that they consume alcohol were asked if they have done so since becoming pregnant. There were nearly one in six such respondents (9), equivalent to 15.0% 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 = 60)		Stopped drinking because of pregnancy (n = 60)	
	n	%	n	%
Yes	9	15.0	50	83.3
No	51	85.0	10	16.7

At the same time, almost one in five people who reported having consumed alcohol (16.7% or 10) indicated that they did not stop drinking because they became pregnant.

Interpretation of the AUDIT Scores

A look at the AUDIT scores (total score on Questions 1 to 10 on the questionnaire) showed that 3.3% (n = 2) 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 a 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[1]		Respondents	
		n	%
Overall AUDIT Score			
Low Risk	Q1 – Q10 (score of 0 to 7)	58	96.7
High Risk	Q1 – Q10 (score of 8 or more)	2	3.3
Hazardous Consumption Level	Q2 – Q3 (score of 1 or more)	33	55.0
Alcohol Dependence	Q4 – Q6 (score of 1 or more)	5	8.3
Alcohol-Related Harm	Q7 – Q10 (score of 1 or more)	8	13.3
Past Alcohol Problem	Q9 - Q10 (score of 1 or more)	5	8.3

A more detailed interpretation of the patients' total score may be obtained by determining 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 55.0% (n = 33) 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 8.3% of the respondents (n = 5) whose scores on these questions would suggest the emergence or presence of alcohol dependence.

Points scored on Questions 7 to 10 indicate that alcohol-related harm is already being experienced. The scores on these questions show that 13.3% of the participants (n = 8) were in this state.

Scores on Questions 9 and 10 were reviewed to determine 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 8.3% (n = 5) patients who fell within this category.

[1]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.

TOBACCO USE

The results showed that, overall, 10.0% of the pregnant women surveyed (n = 6) indicated that they used tobacco (cigarette or some other form of tobacco product) in the past year (before being surveyed). There was no reported current use of cigarettes in the 30 days prior to the survey.

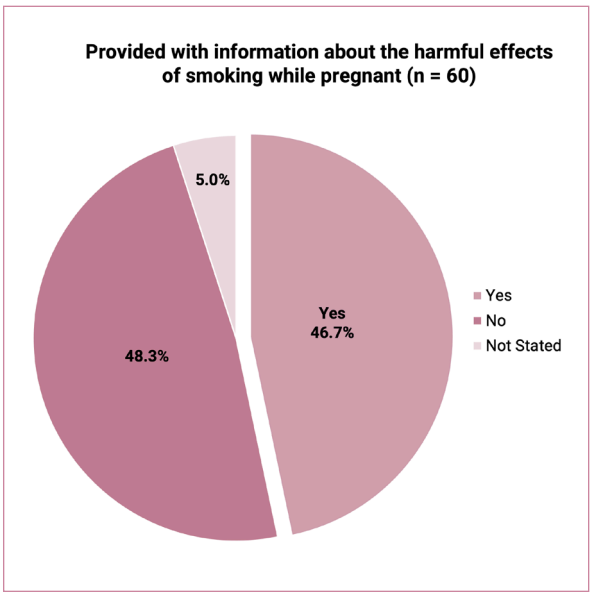
	Annual Use (Past Year)			
	Yes		No	
TOTAL	6	100	50	100
Age Group				
15 – 19	1	16.7	-	-
20 – 24	1	16.7	1	2.0
25 – 29	1	6.7	12	24.0
30 – 34	2	33.3	21	42.0
35 – 39	1	16.7	13	26.0
40+	-	-	3	6.0
Gestation (Trimester)				
1st	2	33.3	1	2.0
2nd	3	50.0	18	36.0
3rd	1	16.7	31	62.0
Parity (First Pregnancy)				
Yes	4	66.7	28	56.0
No	2	33.3	22	44.0

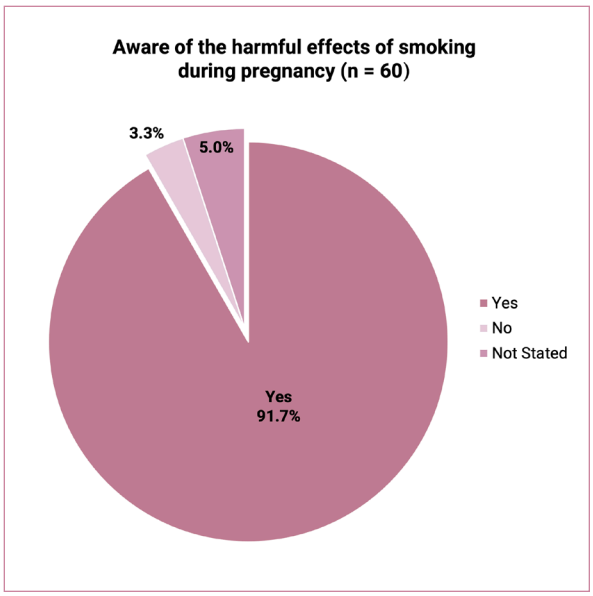
**Where numbers and percentages do not add up to the referenced totals mean that the difference is accounted for by not stated responses.*

Respondents were asked if they had stopped smoking because they became pregnant, with 18.3% reporting a cessation of smoking because of becoming pregnant. The majority of the women who stopped smoking were currently in their second trimester (n=5), while there were a slightly larger number who were in their first and third trimesters (n=6).

Knowledge and Perception of Harm

Just under half of the respondents (46.7%) 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 nearly one in two pregnant women (48.3%) who indicated that they had not been cautioned about the harmful effects of smoking by their doctor or other health provider.

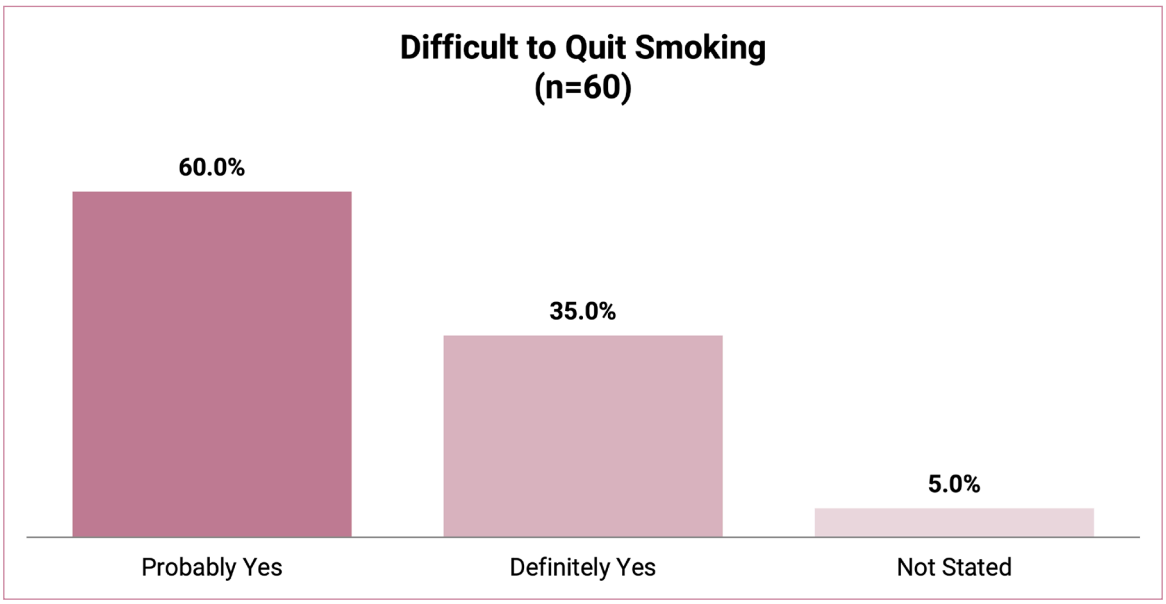




Nonetheless, the majority (91.7%) of pregnant women indicated that they were aware of the harmful effects of smoking during pregnancy. At the same time, when asked about their perception of cigarette smoking to their health, a large proportion of women (95.0%) reported that they 'definitely think' that this habit is harmful.

Perception of Quitting Smoking

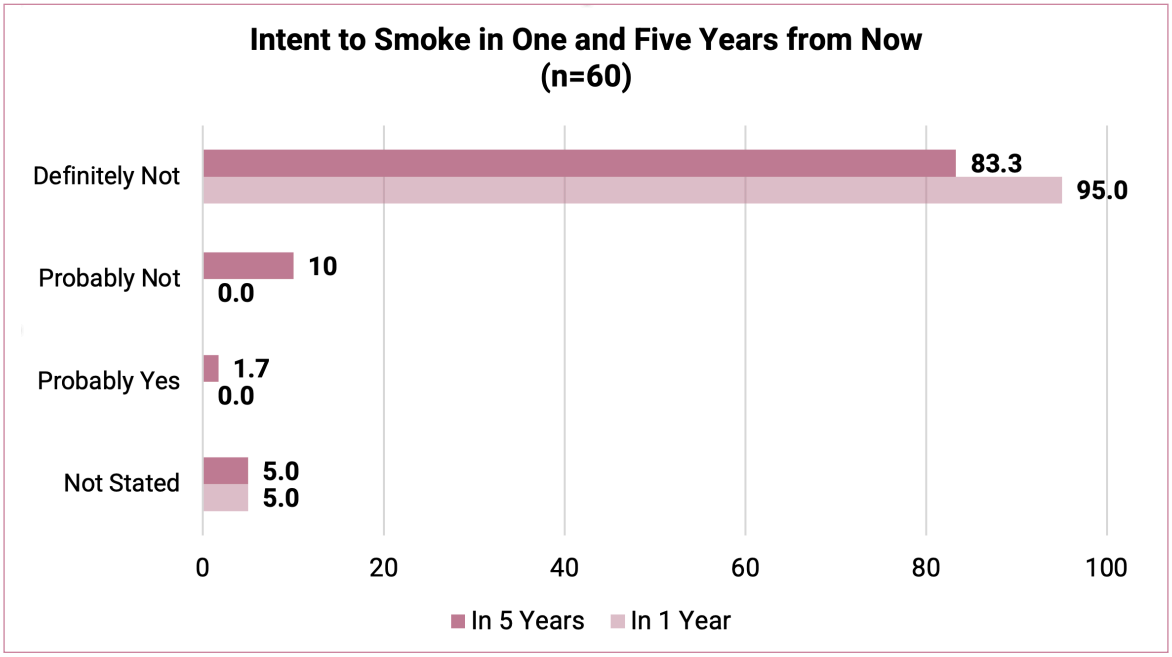
Respondents were asked if they thought it would be difficult for someone to quit smoking once they had started. In response, nearly four in ten (35.0%) said 'definitely yes' and 60.0% said 'probably yes'.



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 their intention was 'definitely not' to smoke cigarettes within the next 12 months.

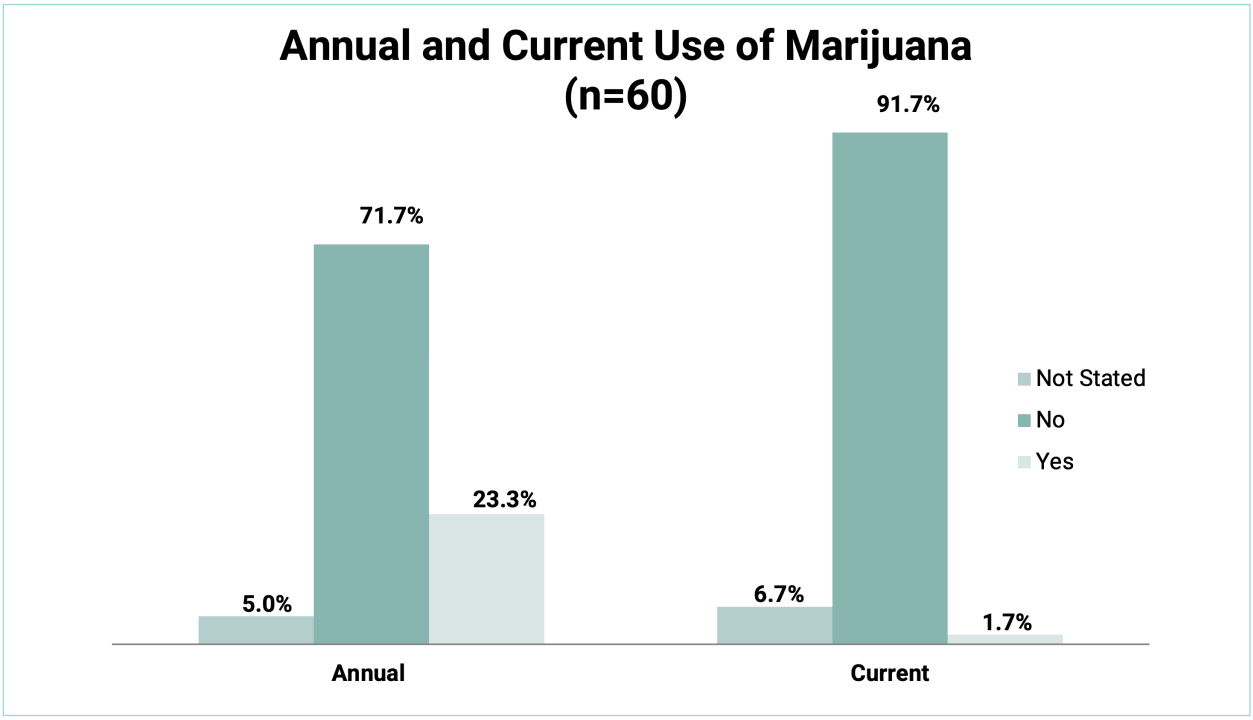
In comparison, the intention to not smoke cigarettes dropped to 83.3% of the respondents when the reference period changed to 'five years from now'. As such, there were fewer respondents who indicated 'probably yes' to smoking in five years, with no one indicating probable use in one year to 1.7% in 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 and a small proportion reported their probable intention to smoke in five years. At the same time, there was only one person who indicated a definite possibility of smoking in five years.

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 four (23.3%) women reported annual use of marijuana, while 1.7% indicated current use.



Of those (n = 14) who reported the use of marijuana in the past year, most (n = 7) were between the ages of 30 to 34 years; with the majority being in their third trimester (n=6), followed by those being in their second and first trimester, respectively (n=5 and n=3). For a few (n = 5), this was 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, one person reported use of marijuana, implying that 13 persons who smoked in the past 12 months no longer smoked in the past one month.

ELECTRONIC VAPING

During this round of the survey, questions were asked to assess the use of electronic devices such as e-cigarettes and hookahs amongst pregnant women. E-cigarettes are known as battery-operated cigarettes that turn chemicals, including nicotine, into vapor, which is then inhaled. E-cigarettes contain substances that are harmful to a developing baby, like heavy metals, flavorings, and cancer-causing chemicals[2].

The survey respondents were asked if they had used e-cigarettes or electronic nicotine products in the past year (annual use). A small proportion 16.7% or ten women, reported annual use of e-cigarettes or electronic nicotine products. In terms of frequency of use, five or 8.3% of survey respondents stated that during the three months before they got pregnant, on average, they used e-cigarettes or electronic nicotine products between one day a week to 2-6 days a week.

Respondents & First Pregnancy by Age Group

	E-cigarettes or Electronic Nicotine		Hookah	
	Number	Percent (n=60)	Number	Percent (n=224)
Yes	10	16.7	1	1.7
No	47	78.3	56	93.3
Not Stated	3	5.0	3	5.0
Total	**60**	**100.0**	**60**	**100.0**

For those survey respondents who reported annual use of e-cigarettes or electronic nicotine products, most were between 30-34 years old (n=7); with five respondents indicating that this current pregnancy was their first and that the majority (n=6) were in their third trimester. In terms of reported annual use of a hookah, there was one person who indicated having ever used a hookah in the past year.

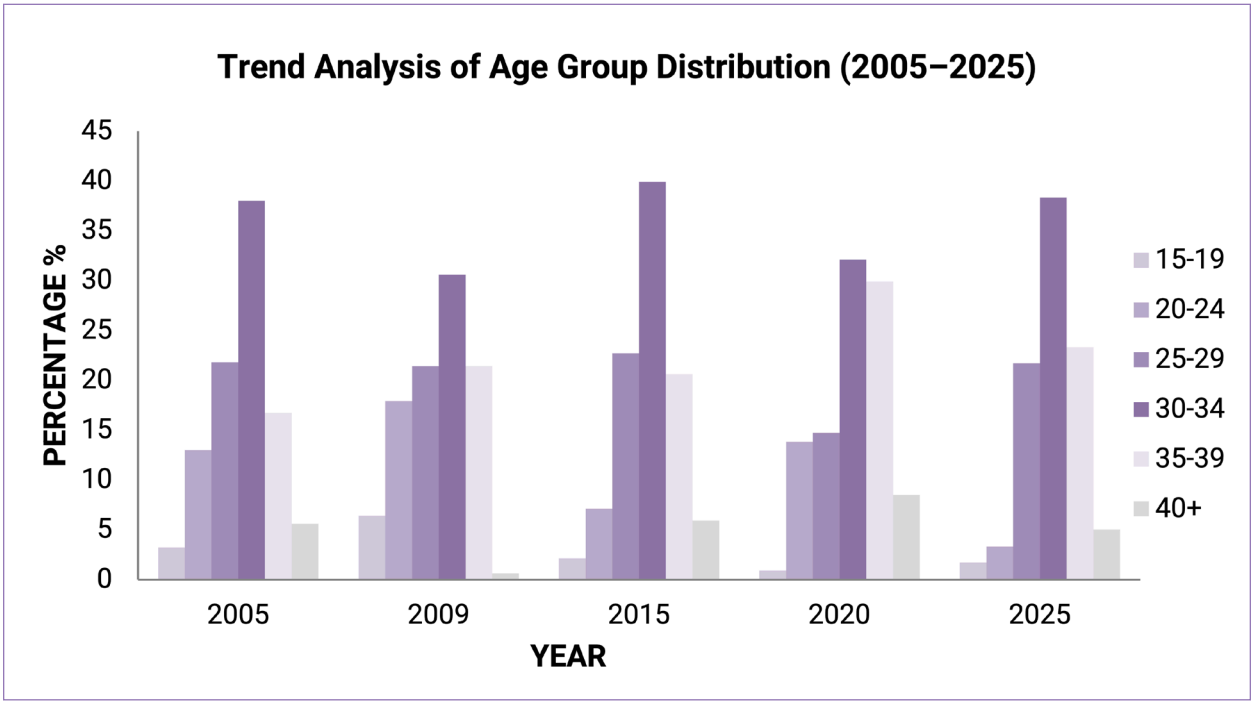
[2]1A. Little Caldwell, MD. (2019). *E-Cigarettes Use During Pregnancy & Breastfeeding FAQs.* American Academy of Pediatrics, Retrieved from https://www.healthychildren.org/English/ages-stages/prenatal/Pages/E-Cigarette-Use-During-Pregnancy-Breastfeeding.aspx.

TRENDS (2005-2025)

Over the past two decades, maternal health behaviors have undergone notable shifts, reflecting changing lifestyles, public health efforts, and emerging risks. From 2005 to 2025, the average maternal age steadily increased, with fewer younger mothers and more women in their 30s. While tobacco use declined significantly, alcohol consumption—particularly binge drinking in later trimesters—remained a persistent concern. In recent years, new patterns such as e-cigarette use have emerged, highlighting evolving behaviors and potential risks. This report provides a comprehensive look at these trends, revealing how maternal demographics and health behaviors have transformed over twenty years.

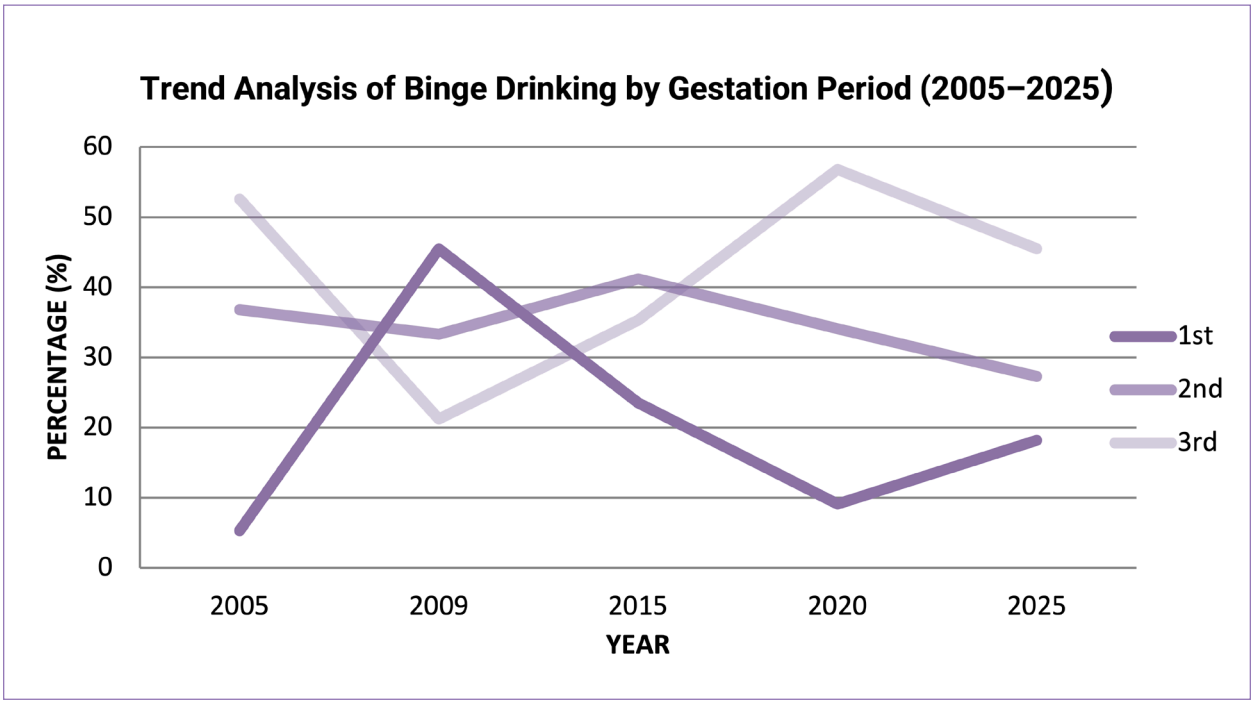
Demographics (Age Distribution)

Over the 20 years (2005–2025), there has been a clear shift in the maternal age distribution. The dominant age group moved from 30–34 years in 2005 (38%) and remained the largest in all subsequent years, reflecting a consistent trend toward older maternal age. Women aged 25–29 declined gradually, while those aged 35–39 rose moderately. The proportion of younger respondents (15–24 years) dropped significantly after 2009, indicating later pregnancies.



Alcohol Use (Binge Drinking by Trimester)

Binge drinking patterns show a notable increase in the later trimesters over time. In 2005, binge drinking was most reported in the third trimester (52.6%), which persisted through 2025, with 45.5% still reporting in the third trimester. Early-trimester binge drinking declined modestly, indicating better awareness or intervention in early pregnancy stages.

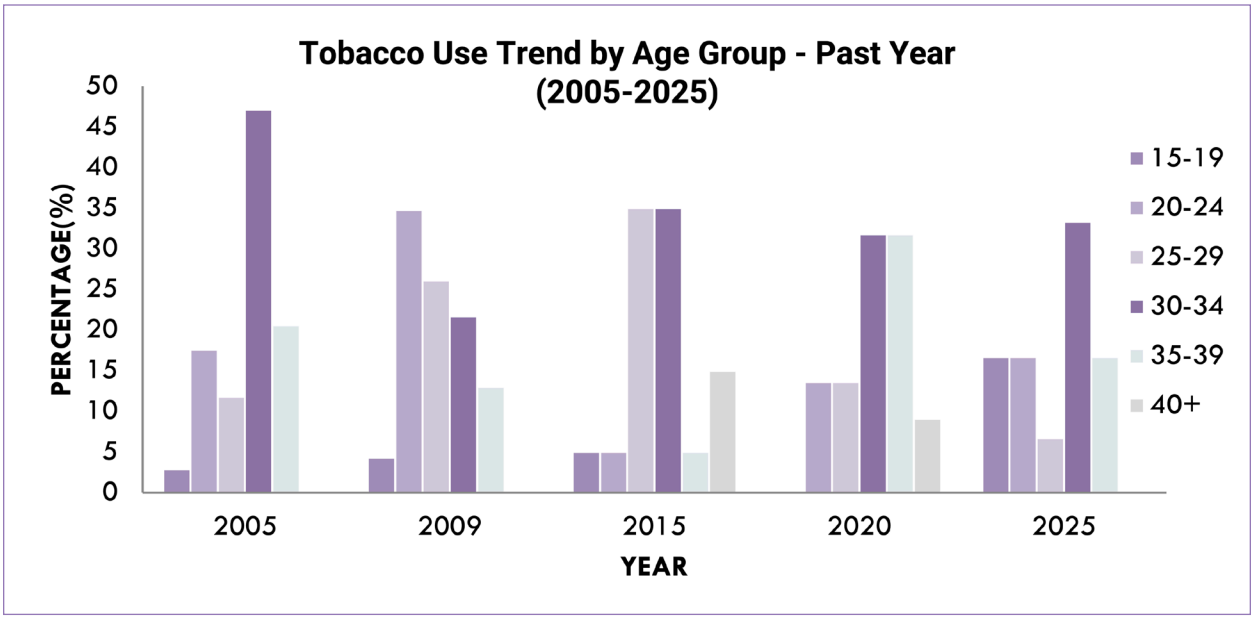


Tobacco Use (Past Year and Current)

Tobacco use among pregnant women shows distinct patterns across age, pregnancy stage, and parity over the past two decades. Women aged 30–34 years consistently report the highest use, while younger women generally show lower rates with occasional fluctuations. Across trimesters, use tends to rise as pregnancy progresses, suggesting continued use into later stages. Differences by pregnancy history also emerge—women with previous pregnancies have typically shown higher rates, though recent data suggest this trend may be shifting. Overall, the findings highlight how maternal tobacco use varies with age and pregnancy experience, reflecting the influence of social, behavioral, and awareness factors over time.

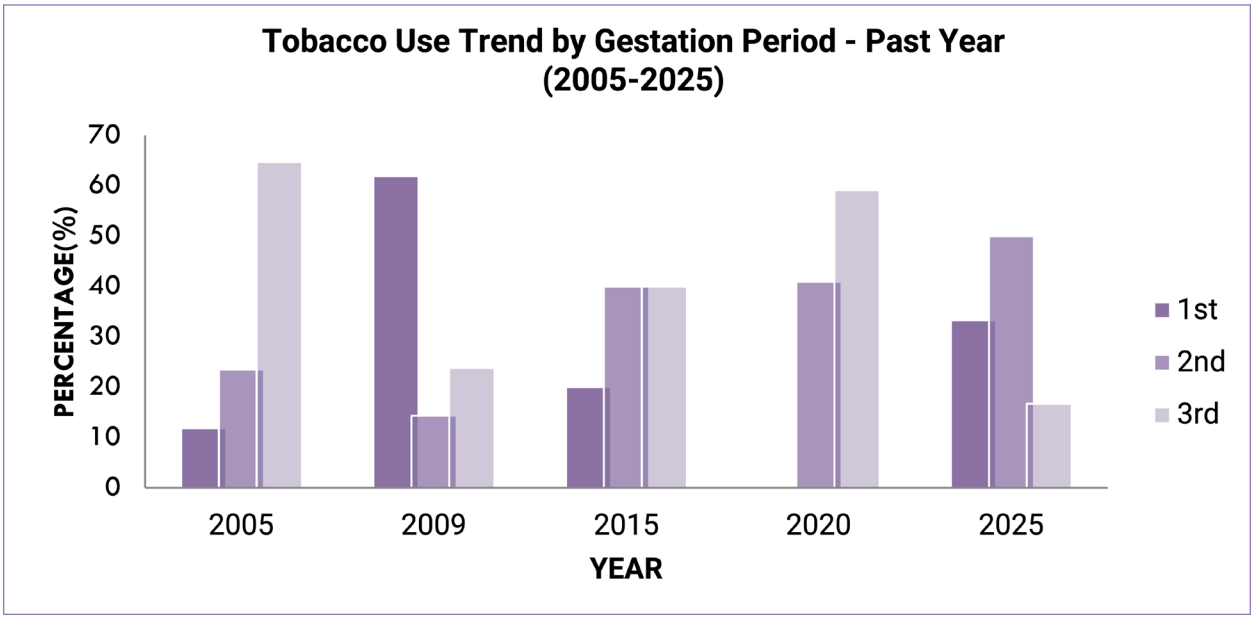
Age Group

Over the two decades, tobacco use among pregnant women varies noticeably by age. The 30–34 age group consistently shows higher prevalence in both past-year and last-30-day use, especially in earlier years such as 2005 and 2020. Younger participants (15–24 years) generally report lower usage rates, though a small increase appears in 2025. The data also suggests intermittent spikes, particularly in 2009, where short-term (30-day) use rose markedly among younger women. This pattern may reflect fluctuating social norms or awareness campaigns influencing short-term versus habitual use.



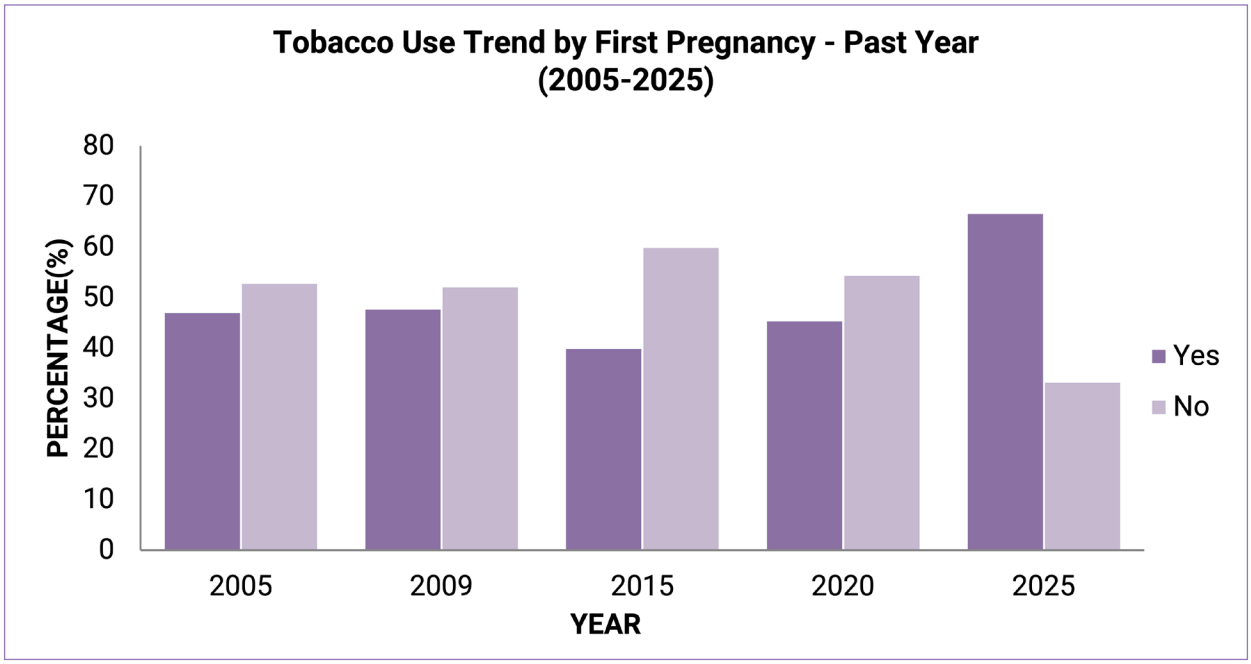
Trimester

When analyzing by trimester, a clear pattern emerges where tobacco use tends to increase as pregnancy progresses. Past-year use is most pronounced in the third trimester for most survey years, indicating that some women continue use further into pregnancy. The second trimester shows moderate levels, while the first trimester remains lowest except for the outlier year of 2009, where early-pregnancy use rose significantly. Short-term (30-day) data follow a similar but less stable trend, suggesting sporadic use during pregnancy rather than consistent long-term smoking behavior.



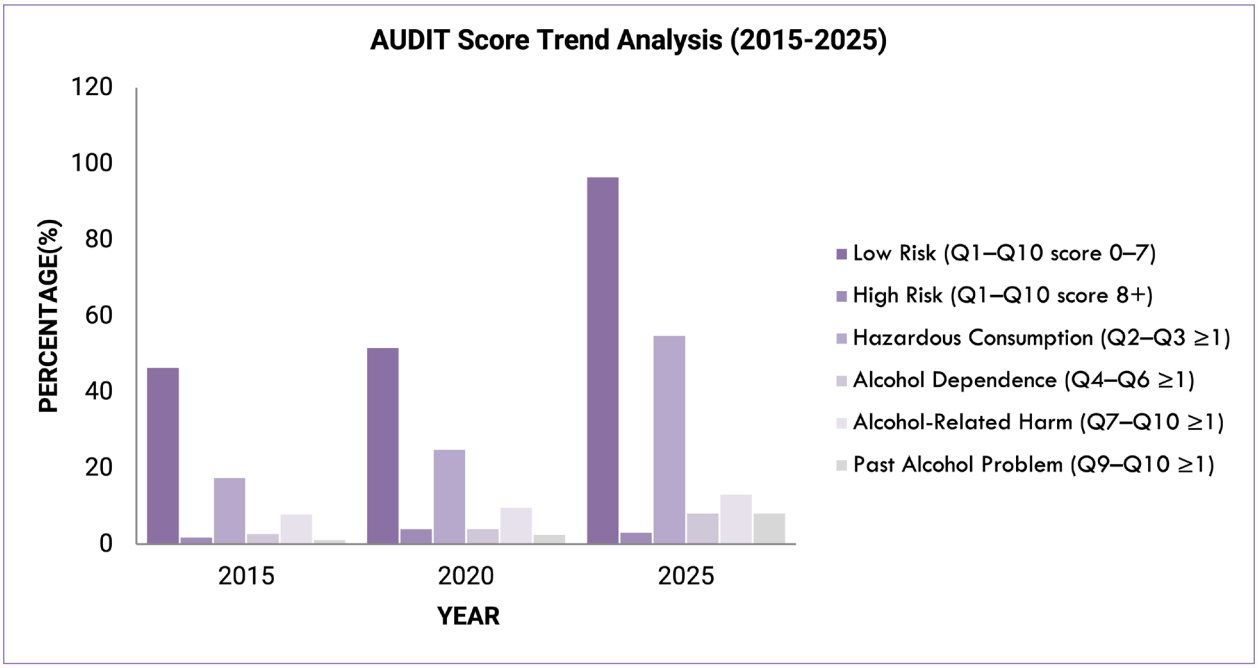
First Pregnancy

Comparing first-time mothers with those who have given birth before reveals distinct behavioral differences. Over time, women with previous pregnancies generally report slightly higher past-year use until 2025, when first-time mothers exhibit a sharp increase to 66.7%, indicating a potential reversal in behavior. In the last-30-day data, first-time mothers display higher recent use in multiple years, especially in 2009 and 2020—suggesting a stress-related or awareness-linked tendency toward temporary relapse or experimentation during early motherhood.



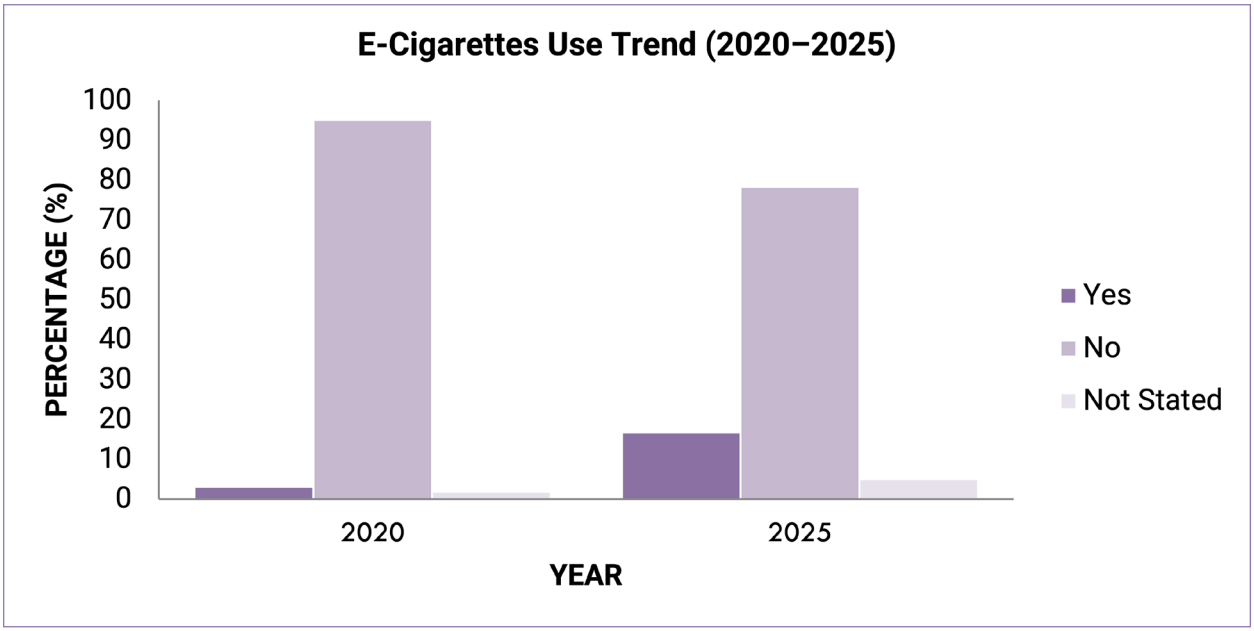
Alcohol Use Risk (AUDIT Categories)

From 2015 to 2025, low-risk drinkers consistently represented the majority (above 45%), while high-risk consumption remained low (<5%). However, hazardous consumption and alcohol-related harm increased notably from 17.6% and 8.0% in 2015 to 55.0% and 13.3% in 2025, respectively, suggesting a possible shift from frequency-based risk to behavioral or situational risk patterns.



Vaping Use (E-Cigarette and Hookah)

Vaping use emerged as a new behavioral pattern in 2020. E-cigarette use increased from 3.1% in 2020 to 16.7% in 2025, reflecting growing adoption of vaping devices. Conversely, hookah use declined sharply from 4.0% to 1.7% over the same period, indicating a possible substitution effect or stronger regulation on traditional smoking alternatives.



Overall, between 2005 and 2025, maternal age has steadily increased, with fewer younger respondents and a higher share of women aged 30–39. Binge drinking in later trimesters remains a concern, though early pregnancy binge drinking shows a modest decline. Tobacco use has decreased substantially, indicating effective public health messaging. Alcohol-related behavioral risks (e.g., hazardous drinking) rose in recent years, despite low overall AUDIT high-risk scores. Vaping emerged as a new pattern of concern, with e-cigarette use increasing sharply by 2025. These findings underscore the evolving landscape of maternal health behaviors over two decades.

DISCUSSION

Over the past twenty years, maternal health behaviors have changed alongside lifestyles and social norms. More woman are choosing to have babies later in life, which shows a shift towards delaying childbearing. Declines in smoking rates highlight the progress made in public health awareness. However, we still face challenges like binge drinking and an increase in risky consumption, suggesting that these behaviours are becoming more about specific situations rather than everyday habits. The emergence of e-cigarettes is also part of this trend.

The utilization of ATODs during pregnancy in Bermuda is still minimal; however, findings from this survey indicate that early screening and brief counseling might be necessary for certain women with a prior history of alcohol, tobacco, and/or marijuana use before becoming pregnant. In line with our ongoing surveillance efforts, the DNDC will continue to gather information on this specific sub-demographic as part of our commitment to providing culturally relevant data for policymakers. Other suggestions to address substance use during pregnancy might include, but are not limited to, the following:

- Public health campaigns emphasizing that no amount of alcohol is safe during pregnancy;
- Targeted outreach to women of childbearing age—especially first-time mothers—to prevent initiation.
- Education and awareness of the associated risk of using alcohol, tobacco, and marijuana during pregnancy as a part of childbirth classes, including risks associated with secondhand smoke exposure.
- Establish referral pathways to support services for women who report use;
- Include vaping education in prenatal and preconception health programs.

APPENDIX A

Additional Information about the AUDIT

Drinking Alcohol during Pregnancy

The total AUDIT score, along with factors such as consumption patterns, signs of dependence, and evidence of current harm, should all be considered when determining how to manage a patient. Typically, the overall AUDIT score indicates a patient's level of alcohol-related risk. In general healthcare settings, most individuals score below the established cut-off points, suggesting a low risk of alcohol-related problems—consistent with the findings of this survey. A smaller yet notable portion of the population scored above the cut-offs, with most of their points coming from the first three questions, indicating hazardous drinking patterns rather than dependence. An even smaller group scored very high, showing signs of dependence and alcohol-related harm.

Currently, there is insufficient research to clearly define a cut-off score that separates hazardous or harmful drinkers—who may benefit from brief intervention—from those with alcohol dependence, who require diagnostic evaluation and more intensive treatment. This distinction is important because screening programs aimed at identifying alcohol dependence often detect many hazardous and harmful drinkers when using a cut-off score of 8. These individuals should receive less intensive, targeted interventions. Generally, the higher the AUDIT score, the greater the likelihood of alcohol dependence. For participants scoring between 8 and 15, the most appropriate response is to provide simple, supportive advice focused on reducing hazardous drinking, especially considering their pregnancy status.

Drinking alcohol can cause serious short- and long-term health problems. In the short term, alcohol impairs judgment, coordination, and reaction time, increasing the risk of accidents, injuries, and alcohol poisoning. Over time, heavy drinking can damage the liver—leading to conditions such as fatty liver, hepatitis, and cirrhosis—and raise the risk of several cancers, including those of the liver, breast, and colon. It can also contribute to high blood pressure, heart disease, and weakened immunity. Alcohol affects the brain by altering mood and behavior, leading to addiction, memory loss, and mental health issues like depression and anxiety. Socially, it can cause relationship and work problems, and drinking during pregnancy can result in lifelong birth defects known as Fetal Alcohol Spectrum Disorders (FASDs). Health experts agree that the safest choice is to drink moderately, if at all.

What are the hazards of drinking alcohol during pregnancy?

Drinking alcohol during pregnancy can seriously harm both the mother and the developing baby. The Centers for Disease Control and Prevention (CDC) states that there is no safe amount or time to drink alcohol while pregnant, and all forms—beer, wine, or liquor—can be harmful (CDC, 2024). Alcohol passes through the placenta, exposing the baby to the same level as the mother. Because the baby's liver is undeveloped, it cannot process alcohol, leading to toxic effects on growing organs.

Prenatal alcohol exposure can cause Fetal Alcohol Spectrum Disorders (FASDs), which include lifelong physical, behavioral, and cognitive disabilities. The most severe form, Fetal Alcohol Syndrome (FAS), can lead to abnormal facial features, growth problems, and brain damage, resulting in learning and behavioral difficulties (Mayo Clinic, 2024). Drinking during pregnancy also increases the risk of miscarriage, stillbirth, premature birth, low birth weight, and birth defects affecting the heart, kidneys, and other organs (NIAAA, 2024). Babies exposed to alcohol in the womb are also more likely to suffer from Sudden Infant Death Syndrome (SIDS) and long-term learning or mental health problems (March of Dimes, 2024).

Health experts agree that the safest choice is to avoid alcohol entirely during pregnancy, as even small amounts can cause permanent harm to the baby's development.

What other problems can be caused by drinking alcohol?

Drinking alcohol can cause a variety of health, behavioral, and social problems, affecting nearly every system in the body. The Centers for Disease Control and Prevention (CDC) reports that excessive alcohol use contributes to over 140,000 deaths each year in the U.S. and is linked to chronic diseases, injuries, and social issues (CDC, 2024). Short-term effects include impaired judgment, poor coordination, and slowed reaction time, which increase the risk of accidents and risky behavior. Binge drinking, in particular, can lead to alcohol poisoning, violence, and unintentional injuries (NIAAA, 2024).

Long-term heavy drinking damages multiple organs, especially the liver, causing conditions such as fatty liver, hepatitis, and cirrhosis (Mayo Clinic, 2024). It also raises the risk of several cancers, heart disease, high blood pressure, and stroke, while weakening the immune system (American Cancer Society, 2024). Alcohol misuse can lead to addiction (alcohol use disorder), mental health problems like depression and anxiety, and memory loss. Socially, it can cause relationship issues, financial trouble, and legal problems, and for pregnant women, it can harm the baby, leading to Fetal Alcohol Spectrum Disorders (FASDs) (CDC, 2024).

Overall, alcohol misuse poses serious risks to both physical and mental health. Experts recommend limiting or avoiding alcohol altogether to protect long-term health and wellbeing.

Smoking during Pregnancy

Smoking during pregnancy is extremely harmful to both the mother and the developing baby. Cigarette smoke contains thousands of toxic chemicals, including nicotine, carbon monoxide, and tar, which can reduce the amount of oxygen and nutrients reaching the fetus. According to the Centers for Disease Control and Prevention (CDC), smoking during pregnancy increases the risk of serious complications such as miscarriage, premature birth, low birth weight, and certain birth defects. It can also lead to long-term health problems for the child, including respiratory issues, learning difficulties, and a higher risk of sudden infant death syndrome (SIDS). Because no amount of smoking is safe during pregnancy, health experts strongly recommend quitting as early as possible to protect both maternal and infant health (CDC, 2024).

How can smoking harm the newborn?

During pregnancy, maternal behaviors such as smoking can have serious effects on fetal development. Experts warn that tobacco use during pregnancy exposes the fetus to harmful chemicals that can alter DNA as early as 12 weeks, increasing the risk of lifelong health problems. The more a mother smokes, the greater the risk to her baby. Smoking is strongly linked to low birth weight, sudden infant death syndrome (SIDS), and higher risks of attention and behavior disorders, as well as future nicotine dependence in children (CDC, 2024). Research shows that maternal smoking during pregnancy directly contributes to reduced birth weight and premature birth, both of which can cause long-term disabilities such as cerebral palsy, developmental delays, and learning problems. However, quitting by the end of the first trimester can greatly reduce these risks and improve birth outcomes (Mayo Clinic, 2024).

In recent years, vaping has emerged as a growing health concern, especially during pregnancy. E-cigarettes contain nicotine, THC, and other harmful substances such as heavy metals and toxic flavoring chemicals that can affect fetal growth and lung development. Despite being marketed as a safer alternative, health experts—including the U.S. Preventive Services Task Force (USPSTF)—state there is no evidence that e-cigarettes are effective or safe for smoking cessation during pregnancy. The American Academy of Pediatrics (AAP) warns that vaping increases the risks of miscarriage, abnormal lung function, respiratory infections, and ear infections in infants. Nicotine and other chemicals inhaled through vaping can also pass into breast milk, disrupting infant sleep, hormone balance, and milk supply (AAP, 2024).

In summary, both smoking and vaping during pregnancy expose the baby to toxic chemicals that can cause growth restriction, birth defects, and long-term developmental harm. Quitting all forms of tobacco and nicotine use is the safest choice for protecting both mother and baby.

How can vaping harm the newborn?

Vaping during pregnancy can harm a newborn in many of the same ways that smoking does, because e-cigarettes still deliver nicotine and other harmful chemicals that affect fetal development. According to the Centers for Disease Control and Prevention (CDC), nicotine exposure during pregnancy can damage a baby's developing brain and lungs, reduce oxygen supply, and interfere with normal growth, leading to low birth weight, premature birth, and stillbirth (CDC, 2024). Even e-cigarettes labeled as "nicotine-free" can contain small amounts of nicotine, along with other toxic substances such as heavy metals (like lead), flavoring chemicals, and ultrafine particles that can be inhaled deep into the lungs and reach the placenta.

After birth, babies exposed to nicotine in the womb are at higher risk for sudden infant death syndrome (SIDS), respiratory problems, and developmental delays. The U.S. Food and Drug Administration (FDA) warns that vaping products can contain chemicals that harm the baby's brain development, affecting learning, behavior, and attention later in life (FDA, 2024). Furthermore, secondhand aerosol from vaping exposes newborns to the same harmful substances found in e-cigarette vapor, increasing their risk of breathing problems and infection. The American College of Obstetricians and Gynecologists (ACOG) also emphasizes that because the long-term effects of vaping are still being studied, it should not be considered a safe alternative to smoking during or after pregnancy (ACOG, 2023).

In short, vaping during pregnancy can harm the newborn's growth, brain and lung development, and overall health. Health experts strongly recommend avoiding all forms of nicotine—including e-cigarettes—before, during, and after pregnancy to protect the baby from lifelong health risks.

Marijuana Use during Pregnancy

Using marijuana during pregnancy can be harmful to both the mother and the developing baby. The main psychoactive component of marijuana, tetrahydrocannabinol (THC), crosses the placenta and can reach the baby's brain and other organs, potentially affecting growth and development. According to the Centers for Disease Control and Prevention (CDC), marijuana use during pregnancy has been linked to low birth weight, premature birth, and developmental problems in children, including issues with attention, memory, and problem-solving as they grow older (CDC, 2024). THC may also interfere with normal brain development, as the endocannabinoid system—targeted by THC—plays a critical role in fetal brain growth.

The American College of Obstetricians and Gynecologists (ACOG) warns that using marijuana during pregnancy may increase the risk of complications such as stillbirth and may expose the baby to harmful chemicals through both smoking and secondhand smoke (ACOG, 2023). Additionally, marijuana smoke contains many of the same toxins as tobacco smoke, including tar and carbon monoxide, which can reduce oxygen flow to the fetus. Even edible or vaping forms of marijuana are not considered safe, as THC and other cannabinoids still enter the bloodstream and can affect fetal development.

After birth, THC can pass into breast milk and remain there for days, potentially affecting a newborn's brain development and causing drowsiness, poor feeding, or delayed motor development. The National Institute on Drug Abuse (NIDA) and U.S. Surgeon General both emphasize that there is no known safe level of marijuana use during pregnancy or breastfeeding, and abstaining completely is the best way to protect the baby's health (NIDA, 2024; U.S. Surgeon General, 2024).

It should be noted that, surveillance of marijuana use among pregnant and postpartum women is critical to better understanding the relationship of marijuana use with birth outcomes, and postpartum experiences such as depression and breastfeeding.

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APPENDIX B: QUESTIONNAIRE

GOVERNMENT OF BERMUDA

Department of National Drug Control

PARTICIPANT: Alcohol and drug use can affect your health and can interfere with certain medications and treatments. This public health survey, from the DNDC, will therefore ask some questions about your use of alcohol, tobacco (cigarette), marijuana and vaping. Your answers are anonymous 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	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
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	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
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	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
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	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

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

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

13. Have you ever ridden in a vehicle driven by someone who had been drinking alcohol while pregnant?

	yes	no	I don't know
Bike	1 ☐	0 ☐	2 ☐
Car	1 ☐	0 ☐	2 ☐

II. Tobacco and Marijuana Use Identification Test

1. During the **past year** have you used any form of tobacco or marijuana products?

Tobacco 0 ☐ no 1 ☐ yes
Marijuana 0 ☐no 1 ☐ yes

7. Are you aware of the harmful effects of smoking especially during pregnancy?

0 ☐ no 1 ☐ yes

2. During the **past year** 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

8. Do you think cigarette smoking is harmful to your health?

0 ☐ definitely not
1 ☐ probably not
2 ☐ probably yes
3 ☐ definitely yes

3. During the **past 30 days** have you used any form of tobacco or marijuana products?

Tobacco 0 ☐ no 1 ☐ yes
Marijuana 0 ☐ no 1 ☐ yes

9. Has your doctor or any other health provider discussed the harmful effects of smoking with you since pregnant?

0 ☐ no 1 ☐ yes

4. During the **past 30 days** 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

10. At any time during the next 12 months do you think you will smoke a cigarette?

0 ☐ no 1 ☐ yes

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

13. Have ever used e-cigarettes or electronic nicotine products in the last year?

0 ☐ yes 1 ☐ no **[Go to Question 16]**

14. During the **3 months before** you got pregnant, on average, how often did you use e-cigarettes or other electronic nicotine products?

0 ☐ more than once a day
1 ☐ once a day
2 ☐ 2-6 days a week
3 ☐ 1 day a week or less
4 ☐ I did not use e-cigarettes or other electronic nicotine products then

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

15. During the **last 3 months** of your pregnancy, on average, how often did you use e-cigarettes or other electronic nicotine products?

0 ☐ more than once a day
1 ☐ once a day
2 ☐ 2-6 days a week
3 ☐ 1 day a week or less
4 ☐ I did not use e-cigarettes or other electronic nicotine products then

16. Have ever used a hookah in the last year?

0 ☐ yes
1 ☐ no **[Go to Section III]**

17. How often did you use a hookah in the last year?

0 ☐ more than once a day
1 ☐ once a day
2 ☐ 2-6 days a week
3 ☐ 1 day a week or less
4 ☐ I did not use a hookah in the last year

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!

APPENDIX C: LIST OF PARTICIPANTS

For this round of the survey there were five obstetrician/gynecologists that participated and the government-funded clinic. The participants are as follows:

1. Dr. Wendy Woods
2. Dr. Carla Reese
3. Dr. Emery
4. Dr. Wade
5. The Maternal Health Clinic

GOVERNMENT OF BERMUDA

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