

## **I. Introduction**

Despite widespread knowledge of the harm caused by tobacco, only modest success has been achieved in global tobacco control initiatives. The World Health Organization (WHO) has estimated that 5 million deaths per year are a result from tobacco use, a number that will increase to 10 million deaths per year by the year 2020. It is evident that tobacco use prevalence rate among adolescents is at a rise and the age of initiation is becoming younger. If these patterns continue, tobacco use will result in the deaths of 250 million children and adolescents alive today, many of them in developing countries. Although, there is a concentrated effort to decrease the tobacco usage by the young people, there still has not been any comprehensive tobacco prevention and control information on young people for most developing countries. To address this data gap, the Tobacco Free Initiative (TFI), WHO, and the Office on Smoking and Health (OSH), Centers for Disease Control and Prevention (CDC) have developed the Global Youth Tobacco Survey (GYTS), in consultation with a range of countries representing the six WHO regions, which forms an important part of a global tobacco surveillance system.

On March 18, 2005, the Federated States of Micronesia (FSM) ratified the WHO Framework Convention on Tobacco Control (FCTC). The WHO FCTC is the world's first public health treaty on tobacco control. The WHO FCTC encourages countries to develop and implement action plans to include public policies, such as bans on direct and indirect tobacco advertising, tobacco tax and price increases, promoting smoke-free public places and workplaces, and placing health warning labels on tobacco packaging. One of the important features of the WHO FCTC is the call for countries to develop, implement, and maintain effective tobacco control surveillance systems.

The GYTS is a school-based tobacco specific survey, which focuses on adolescents aged 13-15. It assesses student's attitudes, knowledge and behaviors related to tobacco use and environmental tobacco smoke (ETS) exposure, as well as youth exposure to prevention curriculum in school, community programs and media messages aimed at preventing and reducing youth tobacco use. It is an international surveillance project that generates comparisons of tobacco use between countries with the aim to enhance the capacity of countries to monitor tobacco use and to evaluate preventive programs.

The FSM, like other island states and territories of the United States of America (USA), received a competitive cooperative grant from the Office on Smoking and Health (OSH) of the Centers for Disease Control and Prevention (CDC) to create a tobacco control program to address tobacco use among the adolescents and adults in the country. In November 2006, the GYTS was conducted in the four states of the FSM: Pohnpei, Kosrae, Chuuk, and Yap, to document and monitor the prevalence of tobacco use including: cigarette smoking and current use of smokeless tobacco, and to better understand and assess students' attitudes, knowledge and behaviors related to tobacco use and its health impact. The GYTS focused on 13-15 year old students between grades 7, 8, 9, 10, and 11.

## II. Methods

### Sampling

The GYTS is a school-based survey that uses a two-stage cluster design to produce a nationally representative sample of 13 – 15 year old students in grades 7, 8, 9, 10, and 11. The first-stage sampling frame consisted of all schools grades 7, 8, 9, 10, and 11. Schools were selected with probability proportional to school enrollment size. Twenty seven (27) schools were selected. The second-stage sampling stage consisted of systematic equal probability sampling (with a random start) of classes from each school that participated in the survey. All classes in the selected school were included in the sampling frame. All students in the selected classes were eligible to participate in the survey.

### Data collection

Prior to data collection:

- a. Director of Education for each state was notified to obtain permission to conduct the GYTS in each respective state.
- b. The number of schools and total amount of students in each school was obtained.
- c. Obtained number of eligible classes for each school in order to facilitate sampling of classes.
- d. Made logistical arrangements for survey administration.
- e. Received technical support from WHO WPRO and CDC.

Survey procedures were designed to protect the student's privacy for anonymous and voluntary participation. The self-administered questionnaire was administered in the classroom. Students recorded their responses directly on an answer sheet that could be scanned by a computer.

In each FSM state, the state Substance Abuse and Mental Health Program (SAMHP) hired local people to help conduct the GYTS. The locals and the staff from the respective SAMHP were trained by the state Tobacco Educators on how to conduct the survey, however, in Chuuk and Yap, FSM representatives were there to help train and implement the survey.

The school response rate was 100% (27 of the 27 sampled schools participated). The student response rate was 84.7%, which were 2,670 of the 3,151 sampled students completed usable questionnaires. Therefore, yielding an overall response rate of 84.7%.

### III. Results

Table 1: Percent of students who had ever smoked cigarettes, percent of students who ever smoked that first tried a cigarette before age 10, and percent of students who had never smoked that were susceptible to start smoking in the next year, GYTS FEDERATED STATES OF MICRONESIA, 2007.

State	Ever smoked cigarettes, even one or two puffs	Ever smokers who initiated smoking before age 10	Percent never smokers likely to initiate smoking within a year
<b>FSM</b>	45.6 (41.4 - 49.8)	24.3 (21.0 - 28.0)	30.1 (26.3 - 34.3)
Male	56.2 (49.7 - 62.6)	26.3 (21.8 - 31.3)	34.1 (25.9 - 43.5)
Female	34.7 (29.9 - 39.7)	20.5 (14.9 - 27.5)	27.4 (23.9 - 31.3)

A total of 45.6% of students have ever smoked cigarettes (with males significantly higher (56.2%) than females (34.7%)), of those almost one-fourth (24.3%) have initiated smoking before age 10 (with no significant difference between male (26.3%) and female (20.5%)). One in three students (30.1%) who have never smoked is more likely to be susceptible to start smoking within a year.

Table 2: Percent of students who were current cigarette smokers, current users of tobacco products other than cigarettes, percent who have ever chewed betel nut, percent who have used tobacco with betel nut, and percent of current smokers who were dependent on tobacco products, GYTS FEDERATED STATES OF MICRONESIA, 2007.

State	Current cigarette smoker	Currently use other tobacco products	Percent who have ever chewed betel nut	Percent who have used tobacco with betel nut	Percent of current cigarette smokers who feel like having a cigarette first thing in the morning
<b>FSM</b>	28.3 (23.9 - 33.2)	37.0 (32.2 - 42.1)	61.4 (56.4 - 66.4)	47.6 (44.0 - 51.2)	8.4 (5.1 - 13.5)
Male	36.9 (29.9 - 44.5)	41.8 (34.6 - 49.3)	67.0 (60.4 - 73.7)	52.5 (46.0 - 59.1)	10.0 (5.1 - 18.9)
Female	19.8 (15.9 - 24.5)	32.1 (27.3 - 37.4)	55.6 (49.9 - 61.3)	43.5 (40.1 - 47.0)	6.8 (3.4 - 13.3)

Almost one-third (28.3%) of students have smoked a cigarette in the past 30 days (i.e., current cigarette smoker). Current cigarette smoking is significantly higher among male students (36.9%) than female students (19.8%). Overall, 37.0% of students have used some form of tobacco other than cigarettes in the past 30 days. About two-thirds (61.4%) of all students have chewed betel nut. About half (47.6%) of all students have used tobacco with betel nut, with no significant difference between male and female students. About one in ten (8.4%) of students who currently smoke feel like having a cigarette first thing in the morning.

Table 3: Percent of students exposed to smoke at home, exposed to smoke in public, and supported banning smoking in public places, GYTS FEDERATED STATES OF MICRONESIA, 2007.

State	Percent exposed to smoke from others at home	Percent exposed to smoke from others in public places	Percent who think smoking should be banned in public places
<b>FSM</b>	60.7 (56.6 - 64.5)	71.3 (68.8 - 73.6)	32.5 (27.2 - 38.3)
Male	60.4 (55.2 - 65.4)	73.3 (68.5 - 77.6)	36.7 (31.0 - 42.8)
Female	59.6 (55.1 - 63.9)	68.7 (65.7 - 71.6)	27.7 (21.3 - 35.3)

About two-thirds (60.7%) of students are exposed to smoke from others at home. Almost three-fourths (71.3%) have been exposed to smoke from others in public places within the past 7 days. Overall, one-third (32.5%) of the students are in favor of banning smoking in public places (such as in restaurants, in streetcars, in schools, in gyms and sports arenas, in discos).

Table 4: Percent of students who were taught dangers of smoking, discussed reasons why people their age use tobacco, taught effects of using tobacco, GYTS FEDERATED STATES OF MICRONESIA, 2007.

State	Percent taught dangers of smoking tobacco	Percent discussed reasons why people their age smoke	Percent taught about the effects of smoking
<b>FSM</b>	41.4 (37.2 - 45.8)	32.0 (28.1 - 36.1)	47.1 (44.5 - 49.7)
Male	44.4 (40.1 - 48.7)	33.7 (27.8 - 40.1)	49.5 (45.1 - 53.8)
Female	40.8 (34.7 - 47.2)	31.1 (26.7 - 36.0)	46.7 (42.2 - 51.2)

Only four out of ten all students had been taught in school during the past year about the dangers of smoking (41.4%). During the past year, one-third of the students (32.0%) had discussed in school reasons why people their age smoke. Almost half (47.1%) of the students stated that during the past year, they were taught about the effects of smoking (i.e. makes your teeth yellow, causes wrinkles, or makes you smell bad).

Table 5: Percent of students who saw ads on billboards, saw ads in newspapers, and had an object with a tobacco company logo on it, GYTS FEDERATED STATES OF MICRONESIA, 2007.

State	Percent who saw anti-tobacco messages	Percent who saw pro cigarette ads on billboards in the past month	Percent who saw pro cigarette ads in newspapers or magazines in the past month	Percent who have an object with a cigarette or tobacco logo on it
<b>FSM</b>	70.0 (64.9 - 75.1)	69.6 (66.4 - 72.7)	63.2 (57.6 - 68.5)	25.1 (20.9 - 29.8)
Male	71.1 (63.7 - 78.5)	70.7 (66.2 - 74.8)	63.2 (55.7 - 70.2)	28.8 (24.3 - 33.9)
Female	69.1 (64.4 - 73.8)	68.5 (63.9 - 72.6)	64.7 (58.9 - 70.1)	21.7 (17.3 - 26.8)

Seven out of ten of the students saw anti-tobacco messages within the last 30 days. Over 6 in ten of all students (69.6%) have seen advertisements or promotions for cigarettes during the past 30 days. In the past 30 days, 63.2% have seen cigarette advertisements in newspapers or magazines. One-fourth of all students have an object with a cigarette brand logo on it (such as a t-shirt, pen, backpack, etc.). There were no significant differences by gender.

Table 6: Percent of current smokers who want to quit, current smokers who tried to quit, and current smokers who received help to quit, GYTS FEDERATED STATES OF MICRONESIA, 2007.

State	Percent of current cigarette smokers who desire to stop smoking	Percent of current cigarette smokers who tried to stop smoking during the past year	Percent of current smokers who received help to stop smoking
<b>FSM</b>	86.5 (82.8 - 89.4)	83.2 (75.0 - 89.1)	91.7 (88.4 - 94.1)
Male	86.4 (78.8 - 91.6)	79.3 (67.2 - 87.7)	90.4 (84.4 - 94.3)
Female	91.7 (85.1 - 95.5)	91.9 (83.3 - 96.3)	93.2 (88.1 - 96.1)

Eight out of ten students who currently smoke cigarettes stated that they want to stop smoking (86.5%) or they tried to stop smoking during the past year (83.2%). Nine out of ten (91.7%) who currently smoke have received help or advice to stop smoking. There were no significant differences by gender.

Table 7: Percent of current smokers who usually buy tobacco in a store, percent of current smokers who buy tobacco in a store and were not refused purchase because of their age, and percent of all students who have been offered free cigarettes by a tobacco company representative, GYTS FEDERATED STATES OF MICRONESIA, 2007.

State	Percent current smokers who usually buy their tobacco in a store	Percent current smokers who buy their tobacco in a store and were not refused cigarette purchase because of their age	Percent who have been offered "free" cigarettes by a tobacco company representative
<b>FSM</b>	25.2 (20.7 - 30.3)	31.3 (20.8 - 44.3)	21.7 (18.8 - 24.8)
Male	26.3 (20.0 - 33.8)	38.2 (26.7 - 51.1)	23.4 (19.6 - 27.8)
Female	19.9 (14.9 - 26.2)	24.7 (9.3 - 51.2)*	18.5 (15.3 - 22.3)

\* < 35 cases in the denominator

One-fourth (25.2%) of students who were current smokers bought their tobacco in a store. Out of those who currently smoke and bought their tobacco in a store, one out of three (31.3%) of the students had not been refused cigarette purchase because of their age. There was no significant difference by gender.

#### IV. Discussion

The GYTS was implemented in the Federated States of Micronesia (FSM) to provide base-line data on tobacco use among youths. The GYTS was conducted in the four states of the FSM (Pohnpei, Kosrae, Chuuk, and Yap) to represent the 13 to 15 year olds nationally. Although the survey was directed towards 13 to 15 year olds, it presents a clear picture of the magnitude of the problem of tobacco use among the youths in the FSM.

##### *Prevalence, Cessation and Addiction*

Tobacco use among the youth of the FSM is extremely high, with almost half (45.6%) having tried smoking cigarettes, even if it was one or two puffs, with one out of five trying smoking tobacco before the age of ten (24.3%). Almost one-third (28.3%) of the students have stated that they currently smoke, meaning they have smoked a cigarette in the past 30 days. The data shows that one-third of the students who have never smoked are susceptible to initiate smoking tobacco within the year (30.3%). An early initiation of smoking can trigger a lifetime addiction and premature death from tobacco-related illnesses. This is supported by the difficulties some of the current smokers expressed in quitting smoking, with eight out of ten (83.2%) having tried to quit in previous years with no success. However, 32.9% of the students believe that quitting is within his/her control.

An important finding that came from this survey was the high use of betel nut among the youth in the FSM. The data show that three out of five students have chewed betel nut, while almost half of the students have tried using tobacco with betel nut. This result shows that betel nut use is a major obstacle that the FSM must tackle.

Young people frequently experiment with new and risky behaviors. However, they do not take into account the seriousness of the long-term consequences of his or her behaviors. For youth, the risks of tobacco use are perceived to be distant and are outweighed by what they see as the immediate benefits.

### ***Harmful Effects of Smoking***

Studies have shown that tobacco use increases the risk of developing several cancers and diseases of the cardiovascular and respiratory systems, mainly lung cancer. Since smoking is the main cause of lung cancer and lung cancer usually takes 20 or more years to develop, smoking prevalence is an important predictor of future lung cancer patterns, which has been stated in the upper portion. About 2 out of 5 students report being taught the dangers of smoking, such as lung cancer; almost half of the students stated that they were taught about the harmful effects of smoking, i.e. makes your teeth yellow, causes wrinkles, or makes you smell bad. Although, the message that smoking cigarettes is harmful to a person's health is being taught to the youth, the survey shows that it is not emphasized in the school setting. Nonetheless, the prevalence report shows that though the teachers are talking about the harmful effects of smoking, the students do not comprehend the devastating effects that smoking causes.

### ***Public Awareness***

In the FSM, the FSM Tobacco Control Program along with the Department of Health, Education, and Social Affairs (HESA), with assistance from WHO and CDC, have been working together to raise awareness on the dangers of tobacco smoking, which have been mostly directed towards the youth. In each of the FSM island states, a Tobacco Educator is hired to go out into the community and local schools to educate the youth about the harmful effects and dangers of smoking tobacco or using any other type of tobacco product. Most recently, CDC granted the FSM Tobacco Control Program's grant for a Quitline Program, which serves as a tobacco cessation counseling service to the youth and adult of the FSM. However, currently the quit line service is mainly helping those in the island state of Pohnpei.

Efforts have been made at sending anti-smoking messages to youth. Seven out of ten students have stated that he or she has seen or heard anti-smoking media messages via the television, radio, billboards, posters, newspaper, magazines, and/or movies during the past 30 days. However, these anti-smoking media attempts are being diluted by pro-smoking advertisements, 69.6% of the students have seen or heard tobacco advertisements in the FSM. Therefore, anti-smoking media efforts must be enhanced to decrease to the amount of tobacco advertisement in the FSM.

### ***Regulations in the FSM to control smoking***

Currently, there are existing tobacco laws that prohibit the sale of cigarettes or any tobacco products to minors, to a person under the age of 18 (FSM Code, Title 11, Chapter 13, Subsection 1302). All the students who participated in the GYTS were under the age of 18, however, almost one-third of them are current smokers, with 31.3% of the

students being able to buy their cigarettes in a store without being refused to purchase the cigarette because of his or her age. Therefore, the survey shows that there is a gap between law enforcement and the stores. In the FSM, tobacco is an easy and fast way for stores to increase sales, hence the store shops not adhering to the tobacco law. Also, there is a lack of enforcement of the law, so the practice is increased since the store owners know that they will not be prosecuted. In addition to leniency of the law, parents, guardians, and adults do not help in the cause. Some parents are known to send their children to the store to buy them their cigarettes. With some of the parents, it is lack of knowledge of the law or the consequences of such action.

### ***Environmental Tobacco Smoke***

At present, the FSM Tobacco Control Program, each state's Tobacco-Free Coalition, and the Department of Health, Education, and Social Affairs (HESA) have been working together to pass a law to ban smoking in public places and taxi cabs. Some service providers have put it upon themselves to ban smoking or have a smoking and a no-smoking zone in their premises. These efforts to protect non-smokers are not being supported at the policy level. Most of the places frequented by the youths who conducted the survey do not have anti-smoking rules in their premises, as shown by the large percentage of youths who said they were around others who smoked in the previous week (71.3%). Also, the survey shows that youth are at a high risk to be exposed to smoke from others at home (60.7%). Besides the discomfort of being around someone who smokes, the harmful effects of passive smoking are not that obvious to the youths. Very few are aware of the dangers of smoke from other people's cigarettes with 32.5% of the students in favor of banning smoking in public places.

## **V. Conclusion**

The current use of tobacco among 13 to 15 year olds in the Federated States of Micronesia (FSM) is relatively high, with approximately half of the students have ever smoked a cigarette, while 28.3% are current smokers, and 37.0% report that they use other tobacco products, such as chewing tobacco, home grown brus tobacco, or snuff. It is estimated that that one-third of those students who have never smoked a cigarette will have initiated smoking within a year. This prevalence rate is extremely high, suggesting that if the present trend continues, the youth that currently smokes will endure a lifetime of addiction and may die prematurely from tobacco-related diseases.

Another profoundly alarming outcome of the survey was the percent of students who have ever chewed betel nut and those who have chewed betel nut with tobacco. About two-thirds of 13 to 15 year olds have chewed betel nut, with one out of five having tried betel nut before the age of seven. Almost half of the students surveyed chew betel nut with tobacco. The issue of chewing betel nut must be addressed since the addiction of betel nut chewing can lead to another addiction - the use of tobacco.

The GYTS results show that one-fourth of the students who participated in the survey reported that they initiated smoking before the age of ten. This should be of great concern since the younger the person starts to smoke, the more likely they would become

addicted. Addiction leads to heavy smoking and premature death from tobacco-related illnesses. The time is right for appropriate legislature, especially with the newly ratified Framework Convention on Tobacco Control (FCTC), to be introduced to create tobacco-free environment and increase tobacco taxes and prices to reduce consumption by children and adolescents.

## **VI. Recommendations**

Due to the high smoking prevalence in the FSM, it has been suggested that the FSM adopt strategies to avoid increase and facilitate decrease in this preventable risk factor for non-communicable diseases. The adoption of recommendations especially at policy level, are hampered by the economic use of tobacco. Tobacco is one of the main currency earners in the FSM and its use is increasing. One huge problem that cannot be overshadowed by the economic use of tobacco is its increased use by young people and the long-term effects to their health.

From this survey, the increased use of cigarettes and other tobacco products by young people has been shown and many recommendations, especially specific intervention programs can be drawn. From the discussion above, these recommendations are given:

1. Awareness campaigns on the dangers of cigarette smoking and tobacco products need to be intensified. There is need for regular education on the dangers of tobacco. Anti-smoking campaigns should not be targeted to people with access to television and radio, but should also be targeted to those without access.
2. Involve the Department of Health and Education, as well as non-governmental organizations (NGO's), in the campaign to promote the cessation of cigarette smoking and use of other tobacco products, including betel nut.
3. Design and implement cessation programs for schools and all youth-oriented or affiliated organizations. Cessation programs in schools must be integrated in the school curriculum and should not be done on an informal basis.
4. Enforce the legislation that prevents the purchasing of tobacco products by minors and prosecute those who sell tobacco products to minors.
5. Enact legislations to restrict or ban smoking in public places, such as, restaurants, cinemas, supermarkets, public transportation (e.g. taxis), boats, sakau markets, bars, sporting facilities, etc...
6. Enforce the legislation that restricts the advertisement of cigarette smoking and tobacco products on billboards, newspapers, radio and television, and prosecute those who advertise cigarette smoking and tobacco products.
7. Formulate public policies and enact legislations that regulate tax increases for tobacco products, as well as point of sale and distribution.
8. Awareness campaigns on the dangers of betel nut chewing and chewing with tobacco. There is a need for regular education on the dangers of betel nut.

