

Determinants of Tobacco Initiation among Young People of Palau

by

William Pu

Graduate Program in Global Health Program
Duke Kunshan University and Duke University

Date: _____

Approved:

Allan Burns, Supervisor

Abu Abdullah, Chair

Alba Amaya-Burns

Truls Ostbye

Thesis submitted in partial fulfillment of
the requirements for the degree of
Master of Science in the Graduate Program
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ABSTRACT

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Abstract

Background: Tobacco control and cessation among the youth in Palau is becoming a chief concern in non-communicable disease control within the Palauan Ministry of Health. The most current research states that the trend of tobacco use and initiation among the youth in Palau is ever-increasing. This study seeks to quantitatively and qualitatively explore the exposures to tobacco use in daily life in order to inform future health interventions and programs.

Methods: This study was a mixed methods cross-section study seeking to explore many determinants of tobacco initiation and use among the young people of Palau. Survey questions assessing knowledge, behavior, and attitudes regarding tobacco use were conducted with Palauan youth ages 9 to 18 years across various states of Palau. Three focus groups were also conducted to provide depth to collected qualitative data regarding domains such as tobacco initiation, acquisition, and social exposure. Qualitative analysis was conducted using Stata 14 and qualitative data was examined using Nvivo 11.

Results: 39 individuals participated in the survey portion of the study. Of the 39 participants 18 were tobacco users with the majority of users initiating tobacco use before the age of 12. The most common reason stated for tobacco initiation behavior was peer pressure and curiosity. With regard to smoking cigarettes, 82% of respondents

believed it causes great harm. Whereas only 43.6% of respondents believed that chewing betel with tobacco caused great harm. Over half of ever users of tobacco (57.1%) had at least one friend who uses tobacco. Methods of tobacco acquisition, perception of tobacco use harm, tobacco imitation reasons, and tobacco exposures in daily life were themes collected from focus group discussions.

Conclusions: This study offers insight into certain characteristics of young Palauans who initiate tobacco use. First by quantitative examination of demographic characteristics. Secondly through qualitative exploration of themes such as social tobacco exposure and method of tobacco acquisition. The results of this study emphasize a need for stricter regulation and enforcement of the tobacco policies which are in place. Though knowledge regarding the harms of tobacco are relatively high, there are still misconceptions that exist in understanding the harms of tobacco. One of the intentions of this study is to provide insight to further inform future health interventions targeting young Palauans which use tobacco. Further research should be implemented within this topic in order to fully understand the nuances and intricacies which surround the role of tobacco in the lives of young Palauans.

Dedication

I would like to dedicate my work to my friends and family who have supported me through my entire academic career. I would also like to express my sincerest gratitude to the Palauan people and members of the Prevention Unit in Palau who made me feel like their family. To my research partner Anli Sun, I could not have asked for a better teammate. You have supported immensely in a mental and psychological capacity, particularly when I was frustrated with my research! To my friend Guo Lei, thank you for your wonderful support throughout my time here at Duke Kunshan. Not only did you make my time here extremely memorable but also helped me build my theoretical framework!

Finally, I would like to thank my classmates and cohort here at DKU. We have supported each other in times of difficulty and celebrated together in times of joy. It has been my extreme pleasure to work with such a high caliber of inspired minds. I know we will each go on to achieve wonderful things in our respective futures.

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1. Introduction

1.1 Tobacco as a Global Health Challenge

Palau is an island which resides in the Micronesian region of the Pacific Ocean. The population of this small island totals to approximately 21,000 people (United States Central Intelligence Agency, 2017). Recently, Palau has placed non-communicable diseases (NCD) as one of the forefronts of focus for creating positive Palauan health outcomes. The reason for this focus remains that NCD related deaths in Palau account for over 70% of the mortality cases (Ministry of Health Palau, 2015). According to the National NCD prevention plan, Palau is addressing tobacco as one of the main risk factors for NCD related mortalities. Among one of the greatest concerns of tobacco use prevention in Palau is the use of tobacco by young people (MOH Palau, 2015; MOH Palau, 2016, David et al., 2013). The discourse of this study sought to explore the determinants of tobacco initiation among the youth of Palau. In addition, this study also examines the differential ways tobacco is consumed such as: chewing, smoking, chewing betel with tobacco, and mixing tobacco with illicit substances. As this study addresses the determinants of tobacco initiation, it is important to define the term “tobacco initiation.” The most common definition and the one used within this study is defined by the Global Youth Tobacco Survey and other surveys which measure adolescent tobacco use. Within these surveys tobacco initiation is defined as the point at which the individual first tries a cigarette or any form of tobacco (National Academies, 2015).

Additionally, it is important to define that the usage of “youth” within this study refers to all young persons between the ages of 9 years old to 18 years old. The term used for those under (but not including) 18 years old will be referred to as “children” according to the definition set by the United Nations Children’s Fund (UNICEF, 1989)

Tobacco use remains one of the leading causes of preventable morbidities and death worldwide. As stated in a report by the World Health Organization (WHO) (2018), approximately seven million people each year die from morbidities stemming from tobacco use. If left unchecked, this number is expected to increase to approximately 8 million deaths by the year 2030. A staggering 80% of these deaths from tobacco related health issues are found in the developing world (WHO, 2018). Corroborating this fact is another statistic reported by the WHO that out of the approximated one billion smokers in the world, nearly 80 % percent live in low income or middle-income countries (WHO, 2016; WHO, 2018). The WHO estimates that one-third to one-half of these users will perish from tobacco-related morbidities (WHO, 2016; WHO, 2018).

Though there are many ways tobacco can be consumed (as a product) the most common method is through smoking. Smoking poses significant health risks for both the consumer and those exposed to secondhand smoke. Because there are estimated four thousand chemicals in tobacco smoke, environmental tobacco smoke (ETS) remains a significant problem in tobacco control and treatment. It has been well documented by the WHO and the United States Department of Health and Human Services (USDHHS) that

inhaling second-hand smoke can also cause negative health effects such as different types of lung diseases as well as many kinds of cancers (WHO, 2018; Sinha et al., 2016; USDHHS, 2004).

Another common way to consume tobacco is through chewing whether it be chewing the tobacco directly using tobacco as an additive to another consumption medium such as betel (areca) nut. These methods of tobacco consumption are often times dichotomized into two sectors. The first sector is combustible tobacco use which includes: cigarettes, bidis, kreteks, and cigars. Non-combustible or smokeless tobacco products make up the second sector and include: chewing tobacco, snus, and the aforementioned betel nut with tobacco added. This study shows how the two are related in many societies. The research conducted in Palau for this thesis illustrates that this dichotomy, while useful, does not reflect actual use of tobacco. The western pacific country of Palau has a long history of betel nut chewing, but recently tobacco has been added to betel nut preparations. That non-combustive use of tobacco is complemented by smoking cigarettes, often by the same person who uses tobacco as part of betel nut chewing.

1.2 Associated Morbidities of Tobacco

The causal relationship of smoking to various non-communicable diseases, including lung and other cancers, stroke and other cardiovascular diseases, chronic obstructive pulmonary disease (COPD), and many other respiratory diseases is well established (USDHHS, 1989; USDHHS, 2010; USDHHS, 2014). One may reasonably infer

that a particularly vulnerable population to the negative health effects of tobacco are the youth. Some studies have shown younger people can develop nicotine dependence after tobacco initiation even before daily tobacco use behavior. Meaning, younger people may become dependent on tobacco use and lose autonomy over tobacco use moments after the first inhale of tobacco (DiFranza et al., 2007; Kandel et al., 2007). In another study conducted by Dobeni, Reed, and DiFranza (2010) on youths, researchers found that early non-daily tobacco use (such as use in adolescents) may trigger a dependency and escalation in smoking frequency. As a result, these adolescents may be vulnerable to early onsets of tobacco related morbidities. Tobacco use can also be associated with opportunistic diseases such as tuberculosis. Previous studies have indicated that smoking behavior is associated with a nearly two-fold risk of developing tuberculosis. Because many of these associated morbidities can be chronic conditions, the use of tobacco may be a forerunner to the development of these chronic diseases in early life.

1.2.1 Health Effects of Tobacco Use in Adolescents and Young Adults

Due to the addictive nature of tobacco, one of the foremost concerns is the ease of tobacco dependency in adolescents and young adults. In a report by the surgeon general (2012), approximately 90% of daily smokers begin in adolescence (U.S. Department of Health and Human Services, 2012). These early smokers run significant health risks such as the impaired lung growth and reduced function, possible severe addiction to nicotine, as well as carrying these morbidities into later adulthood.

Some studies have suggested that active smoking in adolescence as well as maternal tobacco use can also be a risk factor for developing respiratory illnesses. Within a study performed by Thatcher et al. (2017), researchers concluded that active smoking during adolescence as well as maternal smoking during pregnancy can result in decreased lung function and lead to compromised lung growth. The exposure of adolescent or young adults to second hand smoke can cause the same effects as being an active smoker (USDHHS, 2012).

1.3 Current Literature on Tobacco Use in the Palau

Tobacco related diseases are indeed a growing problem on a global scale as well as the Pacific Region (Martin & de Leeuw, 2013; Watson et.al., 2015). The WHO has developed a framework of tobacco control in response to the global epidemic and prevalence of tobacco use (World Health Organization, 2015). This framework is adopted by many countries worldwide including that of the Pacific Islands such as Palau.

A particular concern is the prevalence and incidence of tobacco use in Palau. Tobacco use has a long history in Palau dating back to the 1700's. In a book written by anthropologist Mac Marshall, he details the first documented instance of tobacco in Palau was 1710. Marshall goes on to surmise that Palauans most likely began to grow tobacco by 1833 (Marshall, 2013). The Ministry of Health in Palau has cited tobacco use prevention as one of their main focuses (Republic of Palau Ministry of Health, 2015).

This issue is particularly poignant amongst the youth in Palau (Republic of Palau Ministry of Health, 2015) who risk not only diseases such as cancer, but many other health problems as well. Recent studies in Palau have shown that the prevalence of smoking among young people is greater than that of the adult population (Palauan Ministry of Health, 2015; 2016; David et al., 2013). In addition, the use of tobacco products in Palauan youth is inclusive of tobacco to betel nut chewing, chewing tobacco, as well as cigarette smoking (David et al., 2013). In order to prevent the severe morbidities related to tobacco use, an effective strategy is needed to prevent tobacco addiction from an early age rather than attempting cessation post adulthood (United States Center for Disease Control, 2012). By examining the possible determinants of tobacco initiation, one may be able to create more informed tobacco cessation health interventions. Preventive measures taken in tobacco cessation is one of the aims of the Palauan Ministry of Health (MOH). Therefore, the overall aim of this research is aligned with the aims of the Palauan MOH.

1.4 Research Aim and Theory

There are studies that serve to explore the prevalence and effects of tobacco use among young people in Palau but no studies serve to explore the determinants of tobacco use or the reasons why young people in Palau engage in tobacco use in the first place (The Global Youth Tobacco Survey (GYTS) Collaborative Group, 2002; Chiang et al., 2015; David et al., 2013). In a national report disseminated by the United Nations

(2013) regarding the progress of millennium development goals, the prevalence of smoking in high-school aged students in Palau was 83.1%. If the rise and prevalence in tobacco use is left unchecked, a new generation of heavier tobacco dependents will come forth creating a heavier burden on the Health System in Palau. Even though knowledge regarding the negative effects of tobacco use are well understood and known amongst the Palauan youth, tobacco use still remains an increasing problem (WHO, 2009).

It is possible that there are many social and environmental factors which affect the individual and lead to initiation of tobacco use behavior. One theoretical framework which supports this notion is the Social Cognitive Theory (SCT) by Albert Bandura (1986). Bandura postulates that different factors such as self-efficacy and observational learning weigh in on the learned behaviors of an individual, especially young persons. This means that observing close friends or family using tobacco may enable the young person to learn this behavior. As dictated by Flay et. al. (1994) usage of tobacco around the young person may “normalize” the behavior and directly affect their perception of social or physiological consequences of tobacco use behavior. However, tobacco dependence is a complex topic and requires a multi-faceted approach. Meaning, there must be application of more than behavioral theory to explain the phenomena of tobacco initiation and nicotine dependence.

The Biocultural Approach (BA) is one of the two theories which are presented within this study to encapsulate not only SCT but the other facets which may affect

tobacco dependence. As described by Wiley and Allen (2013), the Biocultural Approach theory seeks to examine not only biological aspects but also social constructs as well. Biocultural approaches are often presented in three levels: the individual and body, cultural perspective and expectation, and historical and policy factors. This type of approach seeks to frame the biological mechanisms for disease (or in this case tobacco dependence) within paradigm of local culture. Certainly, it is entirely possible that tobacco dependent youths share many characteristic similarities but to fully understand the role of tobacco in the youth of Palau we must also look at the role which tobacco plays within the young Palauan culture and social constructs. As aforementioned, the core of the Biocultural Theory is composed of biological factors and cultural or social constructs. The biological aspect of the Biocultural Theory includes factors such as: age of the individual, biological responses to tobacco, mechanism of nicotine addiction, secondhand smoke exposure, as well as mixing tobacco with other substances such as betel nut and marijuana. The cultural aspect includes social constructs such as: family constructs, friend groups, interactions with schoolmates, peer groups, cultural events, and other social activities.

Another theory which shares many analogues to the Biocultural Approach is the Social Ecological Model (SEM) (McLeroy et al., 1988). The SEM, like the biocultural approach, postulates that negative health outcomes must be addressed from a multi-level perspective. Within the SEM there are four levels which include: the individual

level (biology and other demographics), the interpersonal level (friends and family), the community level (social norms), and the society (public policy).

An interesting paradigm occurs when these two models are combined.

Sometimes behavior change theories used in public health and tobacco control are strictly within the realm of public health such as the Health Belief Model, Theory of Planned Behavior, or even the SEM used within this framework. A problem with this strict utilization of theory is that the examination of the health problem may become too narrow. Through the combination of theories from multiple fields however, we are able to acquire a more holistic view of the health problem. Such is the reason why global health and public health professionals encourage a multi-theory and multidisciplinary approach to behavior change. Seen in Figure 1 is the combined model of the Social Ecological Model framed within the Biocultural Approach.

Within the determinants are the majority of the elements which affect the individual. The individual level entails the individual's personal choice and behaviors. The next level of Intrapersonal describes the individual's social relationships and tobacco use behaviors of their peers or family members. The intrapersonal level may also include tobacco social tobacco exposures such as at home or at school. At the Policy level, ordinances or laws are made regarding tobacco. The Agency within this level also describes various stakeholders which may be affected by these tobacco laws such as Palauan Congress, the Palauan MOH, and Non-government organizations which

advocate for tobacco prevention. Framing the SEM elements are the elements of the Biocultural Approach. While the SEM elements provide directional modeling in the context of tobacco use, the Biocultural Approach enables us a more holistic perspective on the role tobacco has in Palau.

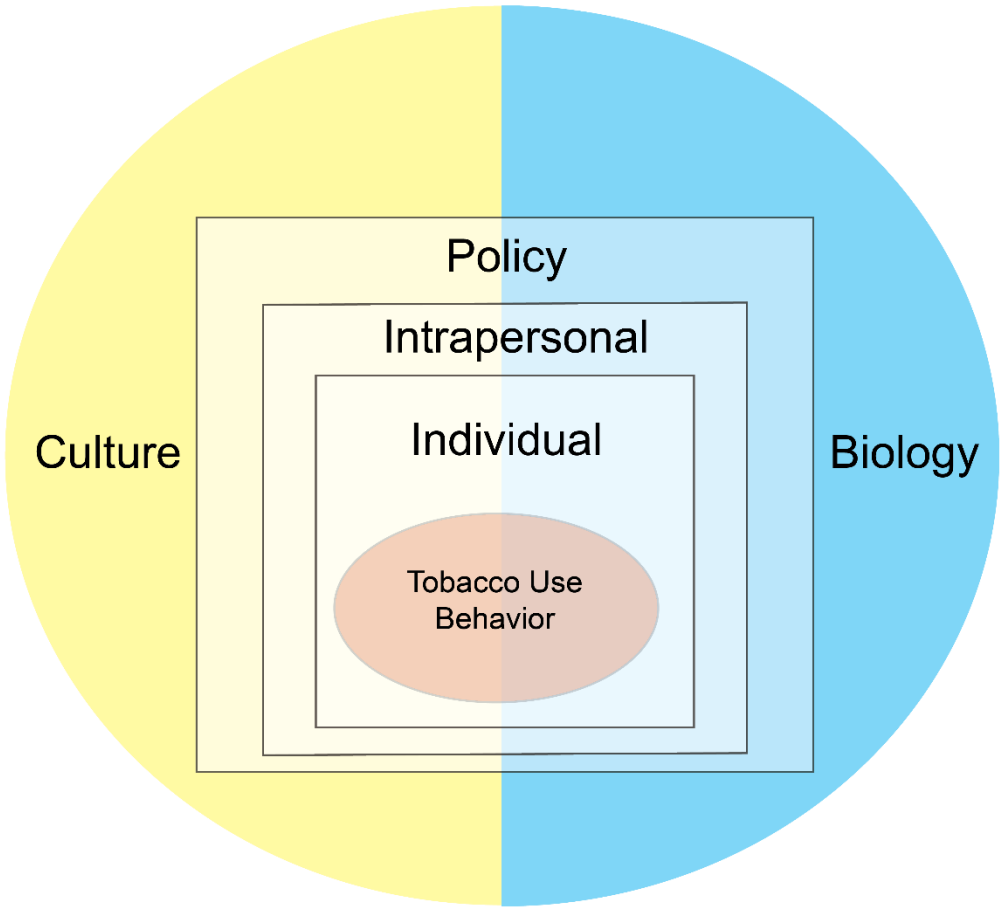


Figure 1. Social Ecological Model Set in the Biocultural Framework

There were three specific aims of this study:

Aim 1: To determine the prevalence of tobacco use amongst young persons in Palau (aged 9-18)

Aim 2: To qualitatively explore the determinants of tobacco use amongst the young persons in Palau

Aim 3: To quantitatively determine the association between certain determinants of tobacco initiation among young people in Palau. These determinants include factors such as language, gender, state, age, in addition to social exposures to tobacco use.

1.4.1 Research Questions:

Main Question: What factors or determinants affect tobacco initiation among young people in Palau?

Sub Question: Are there differences between young persons who have initiated tobacco use and those who have not?

Hypothesis: Smoking behavior of close friends, household members, and environmental exposure are predictors of tobacco initiation and tobacco use behavior of young people in Palau.

2. Methods

2.1 Study Design and Purpose

This study was a mixed-methods cross-sectional study, combining the quantitative methodology of questionnaire as well as the qualitative method of focus group interviews. It also includes ethnographic observations on smoking locations, attitudes, and values gained while living in Palau for a period of 10 weeks. The purpose of this study was to identify the common characteristics shared between the tobacco

using youth population, as well as key differences between tobacco users and non-users. As quantitative data may find certain correlation or possible associations, focus groups were conducted in order to provide depth to the collected data as well as used to triangulate and confirm the hypothesized conclusions gathered from the data.

This study also included the collection of information about the demography of Palau and the relationship of demographic status to tobacco use. In addition, this study filled the gaps as to why these young people engage in tobacco use by exploring their knowledge, attitudes, and beliefs. The following section will detail the sampling methodology, demographic inclusion criteria, domains of the tool used for data collection, as well as the quantitative and qualitative data analysis. In addition, ethical considerations and ethical institutional approval will also be described.

2.2 *Setting*

The Republic of Palau is a relatively small island in the Western Pacific with a total population of approximately 21,000 people. The capitol of Palau is located in Ngerulmud though the majority of the population resides in Koror (approximately 11,000 people) (Republic of Palau, 2015). Though Palau is located very close to the Federated States of Micronesia, Palau is not within their treatise. Gaining independence in 1978 and becoming a Republic in 1980s, this country maintains a free association with the United States. According to the World Bank (2016) Palau is an upper-middle income country. In addition to Palauan, English is the other official language of Palau. It is

interesting to note that some other states have more official languages than Palauan and English. In Sonsorol state, Sonorolese is also an official language and in Anguar, Japanese is also considered an official language. The main health institution in Palau is the Palauan Ministry of Health (PMOH). There are various subdivisions of health organizations underneath the parent division of the PMOH. Many interns such as ourselves who study in public health are assigned to the behavioral health division and intern underneath The Prevention Unit. The Prevention Unit undertakes many responsibilities such as public health outreach, education, as well as referral for substance abuse. Other common interns to the MOH include medical interns which are assigned to the Ministry of Health Hospital (located within the MOH building).

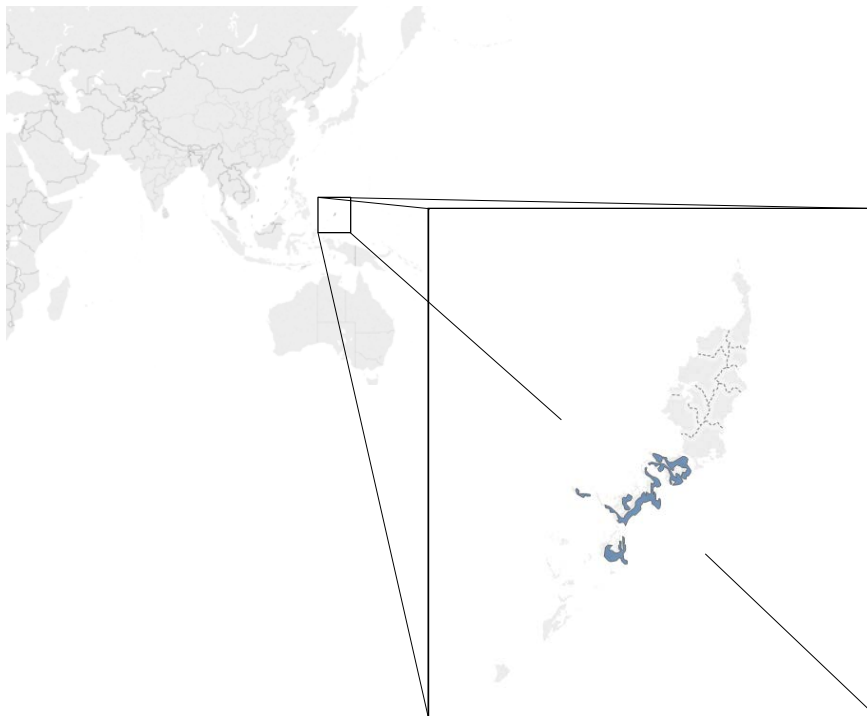


Figure 2. Location of Palau and Koror (where most of the data was collected)

2.3 Participants

The target population consisted of youth in Palau aged 9 to 18 years old. Palauan youth sampled for this study resided in Koror, Palau. Both tobacco users and non-users were surveyed via paper questionnaire. After the approval from the Duke Kunshan IRB and Palau IRB, data collection began. The data collection continued into the end of July 2017. During this time period, surveys were collected mainly from the youth the faith-based organization OBBC, a church in Palau, as well as convenience sampled from various youth activities, and finally in sports arenas where the young persons in Palau tend to gather during the summer time. In some cases we would also visit hamlets around Koror to survey minors after their parents gave them consent to participate. This would occur when parents would consent for their child's participation however we would have to track down their children in the neighborhood.

The inclusion criteria for the gathered sample was any individual between the ages of 9 and 18 years old. Exclusion criteria included any participant who is 18 years or older. Criteria such as gender was not considered as we wished to include all young persons. In addition language criteria was also not considered as English is the official language of Palau aside from Palauan. Because these individuals are not adults, consent forms were sent home or signed at the point of contact when the parent or legal guardian was present. The consent forms stated explicitly that our study: 1. Is not targeting any participant, 2. Any participant or parent not comfortable in the student

participating may exclude themselves from participating, and 3. That the survey results will be completely anonymous, and the data would be kept confidential and protected. Consent forms are included in the appendix to this report (See Appendix C).

Focus group participants were collected from a pool which the parents have consented their participation within the study. The participants must have provided written consent to participate in the focus group discussion. Before the start of the focus group the moderator explicitly stated that the information recorded would not be disseminated to any outside party but there would be no guarantee that other members of the focus group would not reveal information. Therefore, if there was information that the participant wished to omit, he or she could do so, as well as withdraw from the focus group at any time.

2.4 Data collection Tools

2.4.1 Survey

The survey had six sections. These sections included: demographic information, tobacco use behaviors and preferences, tobacco cessation, social exposure to tobacco, perception of harm, and exposure to tobacco advertisements (at the request of The Prevention Unit where I served as an intern). Questions from the first five sections were adapted from the Global Youth Tobacco Survey (GYTS). The questions in the last section were added by the request of the Prevention Unit of the Palau Ministry of Health, specifically the Drug Prevention Office. This study collaborated with the office, and so

adding these questions to the survey allowed the office to determine the effectiveness of their efforts at reducing tobacco consumption.

2.4.2 Focus Group Discussion (FGD)

Focus groups contained participants led by either the primary investigator or a trained community health worker from the Prevention Unit, who also aided in translating the question when needed. Topics of the discussion were reinforced by semi-structured question prompts which focused on the objectives outlined by the survey. Kabir, Goh, and Khan's (2015) focus group methodology was also used as a framework for the focus group discussions. Specifically, their research suggested (here you can name what you used from their study) . Three focus groups 10 people each were conducted with the ages of participants stratified with each session. This was to prevent older participants from influencing or intimidating younger participants and to create an environment which was conducive to discussion. The first focus group contained participants aged 10 to 15 years old. The second group contained participants aged 15 to 18 years old. And the final group contained participants aged 9 to 15 years old.

2.5 Field Research Procedures

Previous to any data collection, consent forms were sent home. Participants younger than 18 years of age were required to obtain both parent and child consent forms. To simplify logistics, both parent and child consent were printed into a single page consent form for the underage consent forms. Both the adult participant and

adolescent consent forms contained contact information of both the Prevention Unit as well as the primary researcher. Contact information was provided in the case that any participant or legal guardian further inquiry or concerns regarding the project. Before the distribution of the consent forms, the study (aims, methods, and confidentiality agreements) was explained to all participants. After the consent forms were signed and collected, the data collection began. The timing between collecting the consent and surveying the participant varied greatly on the availability of the parent and the child. In some cases, if the parent and child were both present, we could survey the participant immediately. If the participant was 18 years old, we could also survey within the same day. We did however have participants who refused to participate. We later learned that it is much better to first call the participant over to explain the research and inquire for their participation. If the researcher outwardly asked without first calling over the potential participant, the individual would simply walk away or ignore the researcher.

The entirety of the data collection occurred in three parts. Prior to the start of the quantitative data collection, the survey was pretested. In addition, the staff assisting in the data collection was trained in ethical handling and collection of research data. The three staff which assisted me in my research were Rusing Kotaro, Sergio Ngiraingas, and Josephine Ngiralmu. All three of these individuals who assisted my research were local community health workers and behavioral health workers within The Prevention Unit. These three as well as other co-workers from The Prevention Unit also served as

our cultural guides in Palau. With the assistance of Ms. Kotaro, Anli Sun, and the other coworkers, we revised the questionnaire to be culturally appropriate and then began pretesting. Following the pretesting, the I collaborated closely with the participants as well as the Prevention Unit staff to formulate a survey which was easier to understand for participants and culturally sensitive. The second part of data collection consisted of a cross sectional surveying of participants convenience sampled from Koror and surrounding states. Each survey questionnaire was administered face to face in the case that any questions or concerns arose regarding the items on the questionnaire. Face to face surveying always consisted of the primary investigator and a Palauan community health worker familiar with the method of ethical data collection in case the participant preferred an explanation in Palauan.

Phase 1: Quantitative Data Collection

The survey was distributed among the youth groups, health promotion events, and door to door sampling. Small incentives were offered for participating and taking the survey. These small incentives were given before the survey is distributed to the participant. Before any data collection, the research assistants were trained on ethical methodology for collecting and handling data. Ethical training was conducted over the course of the same week as the initial survey revision and before the pretest. The research team was trained to take certain precautions such as: not writing down any identifying characteristics. This includes foremost the handling and anonymizing

identifying information as well as the destruction of collected surveys and focus group recordings by the specific date dictated on the IRB. Data was electronically handled and stored in password protected computers, encrypted portable USB drives as well as Duke University secured server(DukeBox) which was only accessible to the primary investigators.

Phase 2: Qualitative Data Collection

The Focus group discussions covered domains such as tobacco use behavior in the participant, exposure to tobacco within the household, by advertisement, and explore reasons as to initiation of tobacco use. Before each session there was a briefing on the information detailed in the consent forms on privacy and participation. Each focus group session was recorded and immediately transferred to an encrypted USB. As each session was approximately an hour, there was a short break in the middle of each session in which food was provided. The participants were required to stay in the focus group room. Upon resuming the focus group session, the moderator asked participants to recall earlier questions and given answers as a way to bring all participants up to speed on the topics which were discussed.

All study procedures were approved by the ethical review boards at Duke Kunshan University, Palauan Institutional Review Board, as well as the Palauan Bureau of Arts and Culture. Even though the Palauan Institutional Review Board was relatively

new, I appreciated the extra care the Palauan Government offices took to safeguard and ensure the privacy of the study.

2.6 Surveys

Surveys were distributed to a sample of young people of Koror, Palau through convenience sampling. The survey included children, young men, and women between 9 years old and 18 years old. Thirty-nine surveys were completed as part of this research. The domains covered in the survey contained questions regarding demographic variables, tobacco use behavior, different exposures to tobacco in daily life (exposure by family, friends, acquaintances, and advertisements.)

2.7 Focus Group Discussion

Topics used in this semi-structured focus group were adapted from a previous study (Kabir, Goh, and Khan, 2007). The topics will include: tobacco use by family or household, social factors which may contribute to first time tobacco use, as well as types of exposure to tobacco use (exposure to different mediums of advertisements). Having both a quantitative and qualitative section to data collection following similar themes enabled the investigator to triangulate the data collected. While the survey collected demographic information as well as the quantitative aspect for analysis, the focus group discussion provided depth to the specific research objectives.

2.7.1 Independent and Dependent Variables

The dependent variable measured in this study was whether or not the participant engaged in tobacco use behavior. As detailed above, the independent variables included demographic factors of the target population, the social exposure of tobacco use by friends and family.

2.8 Data Analysis

After assent was obtained from the participants and the consent from legal guardians (for participants who were under the age of 18 years old). Participants who were age 18 for the survey were able to give their own consent and did not require a consent from a legal guardian. The focus group discussions were conducted by the myself or by trained research assistants and audio recorded. The audio recording was then transcribed and imputed into NVIVO 11 for qualitative data analysis. After transcribing the FGD and translating the parts spoken in Palauan, codes and resulting themes were gathered from the qualitative data.

Questionnaire responses were coded and entered into Stata (Version 14.2) for quantitative data analysis. Due to the low sample size for this study, Fisher's Exact Test was utilized to explore any possible associations between the dependent and independent variables. I was able to draw generalizable conclusions by utilizing quantitative data to provide possible associations and qualitative data to provide depth to the questionnaire findings. Through triangulating the quantitative and qualitative

data, I was able to explore the determinants of tobacco initiation among the youth in Palau.

3. Results

3.1 Demographics Characteristics

Table 1 shows the demographic characteristics of the sample population of 39 young people surveyed. As depicted in Table 1, the ages within the sample were relatively evenly distributed. Participants between the ages of 9 to 10 years comprised 23.1% of the sample, 23.1% were between the ages 11 to 12 years; 15.4% were between the ages of 13-14; 23.1% were between the ages of 15 to 16 years; and 16.7% of participants were between the ages of 17 to 18 years of age. Of the 36 participants whom responded to gender, 50% were males and 50% were females. With regard to their state of origin, the majority of respondents were from Sonsorol (29.4%) and Anguar (20.6%). English was the primary language spoken at home for the majority of participants (69.4%); 25% spoke Palauan at home; with 2% speaking another language such as Chamorro or Yapese. It is poignant to note that 76.9% of participants had at least one family member that used some form of tobacco at home. In addition, 70% of participants also reported having at least one friend who is a tobacco user (Figure 3).

Table 1. Summary of Sociodemographic Characteristics of Participants, N(%)

	Total Participants (N= 39)
Age	N=39
9-10 years old	9(23.1)
11-12 years old	9(23.1)
13-14 years old	6(15.4)
15- 16 years old	9(23.1)
17- 18 years old	6(16.7)
Gender	N=36
Male	18(50)
Female	18(50)
State of Origin	N=34
Kayangel	0(0)
Aimeliik	0(0)
Airai	4(11.8)
Melekeok	1(2.9)
Ngaraard	2(5.9)
Ngarchelong	3(8.8)
Ngaardmau	1(2.9)
Ngeremlengui	0(0)
Ngatpang	0(0)
Ngchesar	1(2.9)
Ngiwal	1(2.9)
Anguar	7(20.6)
Koror	3(8.9)
Peleliu	1(2.9)
Hatohobei	0(0)
Sonsorol	10(29.4)
Language Spoken at Home	N=36
Palauan	9(25)
English	25(69.4)
Other	2(5.6)
Family Tobacco Use	N=39
Yes	30(76.9)
No	9(23.1)
Friend Tobacco Use	N=30
Yes	21(70)
No	9(30)

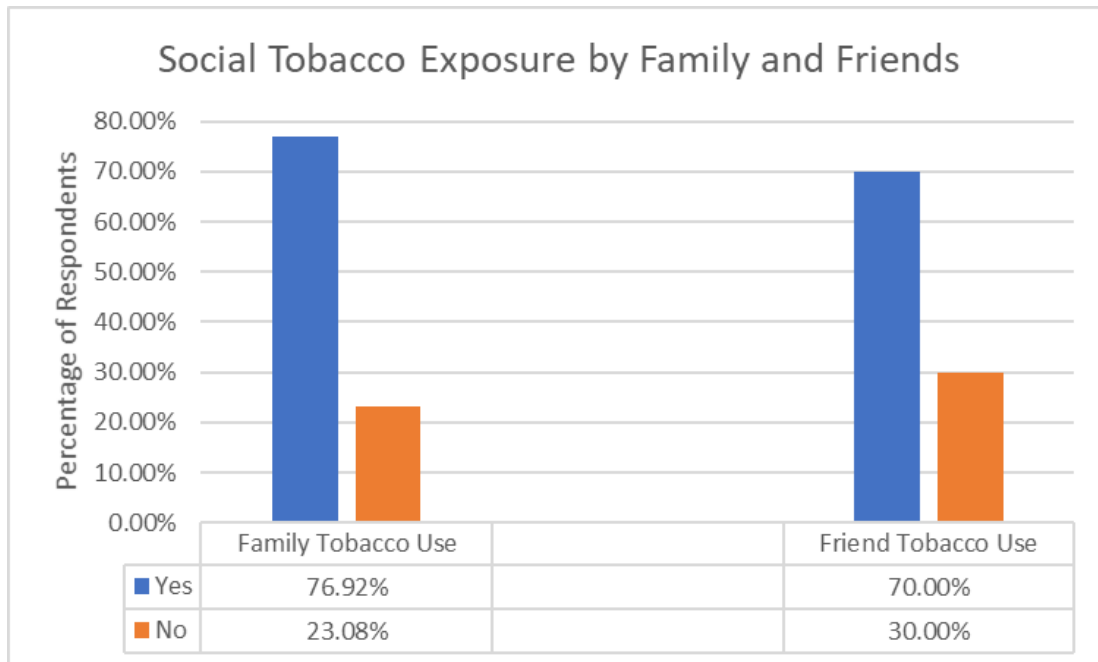


Figure 3. Visualization of Social Exposure to Tobacco by Family and Friends

Table 2 shows that a total of 18 (46.2%) participants reported to be ever users of some form of tobacco (having ever used tobacco in some form, even just one or two puffs). Half of these 18 participants, reported their reason for tobacco initiation was due to peer pressure (50%); with the next highest reason being out of curiosity (27.8%). Many tobacco users started from a young age, as a majority reported tobacco initiation behavior at or before the age of 12 (55.6%); with 22.2% starting between the ages of 13 and 14; 16.7% of users starting between the ages of 15 and 16 years; and a mere 5.6% of users starting between the ages of 17 and 18. The most common type of tobacco consumption method was smoking store bought cigarettes (44.4%); with 33.3% of tobacco users chewing betel nut with tobacco added; and finally 22.2% of tobacco users using chewing tobacco (Figure 4). When respondents were asked if they were alone or in

a group the last time they used tobacco, 61.1% reported they were in the company of at least one other person. Of the respondents, 55.6% expressed some intention to quit tobacco use within one year of taking the survey; 11.1% reported no intention of quitting; and 22.2% had already quit tobacco use behaviors. Of the 12 respondents who attempted to quit tobacco use, 75% had attempted to quit between one and six times; approximately 16% had attempted to quit between seven to ten times, and approximately 8% had attempted to quit tobacco use more than ten times.

Table 2. Demographic Characteristics of Tobacco Users

	Total Tobacco Users N=18
Reason for Initiation	N=18
Peer pressure	9(50)
Family uses tobacco	0(0)
Curiosity	5(27.8)
Like the taste	3(16.7)
Relieve stress	1(5.6)
Other	0(0)
Age of Initiation	N=18
8 years or younger	3(16.7)
9-10 years old	5(27.8)
11-12 years old	2(11.1)
13-14 years old	4(22.2)
15- 16 years old	3(16.7)
17- 18 years old	1(5.6)
Most Common Tobacco Used	N=18
Smoke store-bought cigarettes	8(44.4)
Smoke loose leaf tobacco	0(0)
Chewing tobacco	4(22.2)
Betel nut with tobacco added	6(33.3)
Electronic cigarette or Vape	0(0)
Other	0(0)
Alone the Last Time of Tobacco Use	N=18
Yes	7(38.9)
No	11(61.1)
Parent's Awareness of Tobacco Usage	N=18
Yes	10(55.6)
No	8(44.4)
Intention of Cessation	N=16
Yes, within 30 days	5(31.3)
Yes, within 6 months	1(6.3)
Yes, within 1 year	3(18.8)
Yes, but not within 1 year	1(6.3)
No	2(12.5)
Already Quit	4(25)
Times Attempted to Quit	N=12
1-2 times	3(25)
3-4 times	3(25)
5-6 times	3(25)
7-8 times	1(8.3)
9-10 times	1(8.3)
More than 10 times	1(8.3)

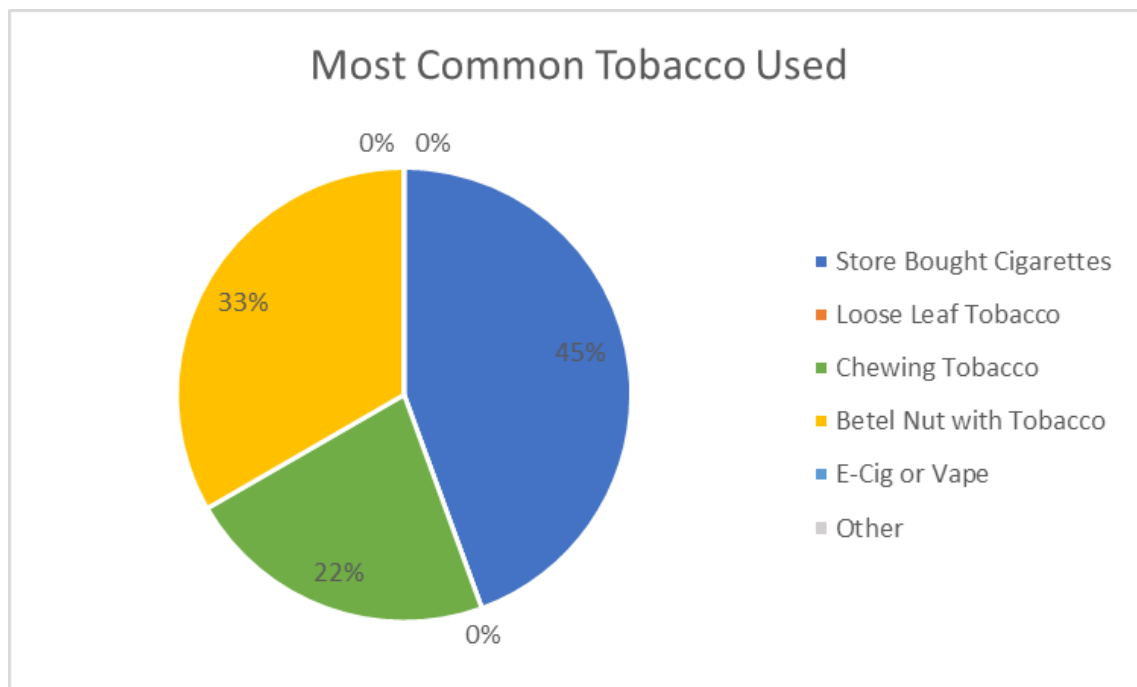


Figure 4. Comparison Between the Most Common Types of Tobacco Use

The highest proportion of ever tobacco users was between the ages of 15 to 16 years of age with 57.1% for females and between the age categories of 15 to 16 years old and 17 to 18 years of age as seen in Figure 5. The highest proportion of current tobacco users for females was 15 to 16 years of age (42.9%). The highest proportion of current male tobacco users tended to be older, falling within the 17 to 18 years old age category (25%). Current and ever users among females fell around the young to mid-teens ranging from 11 to 16 years old but for males the current and ever uses tended to be around the later teens ranging from 13 to 18 years old.

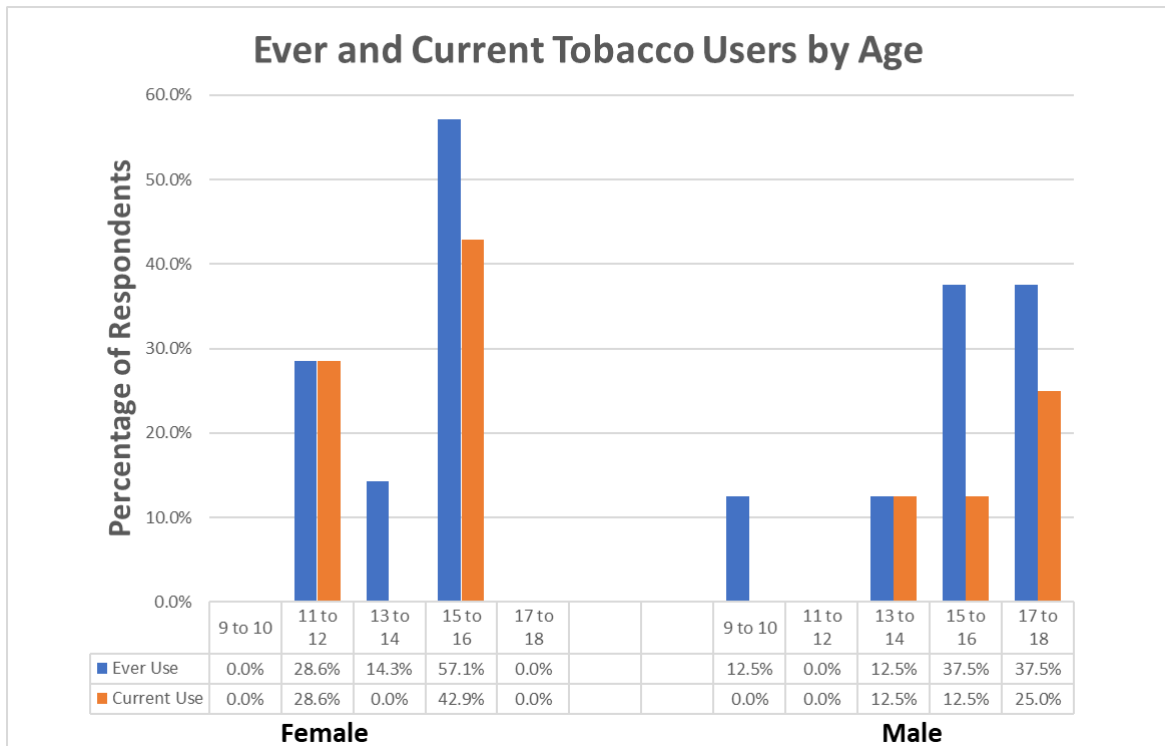


Figure 5. Age of Current and Ever Tobacco Users by Gender

As shown in Figure 6, perception of harm regarding smoking is extremely high. Approximately 97% of all respondents believed that smoking caused some type of harm to the smoker. The majority of respondents answered that smoking causes a great amount of harm to the individual who is smoking (80.6%); 13.9% believed that smoking caused moderate harm to the smoker; 2.8% believed smoking caused a small amount of harm; and 2.8% believed that smoking caused no harm to the smoker.

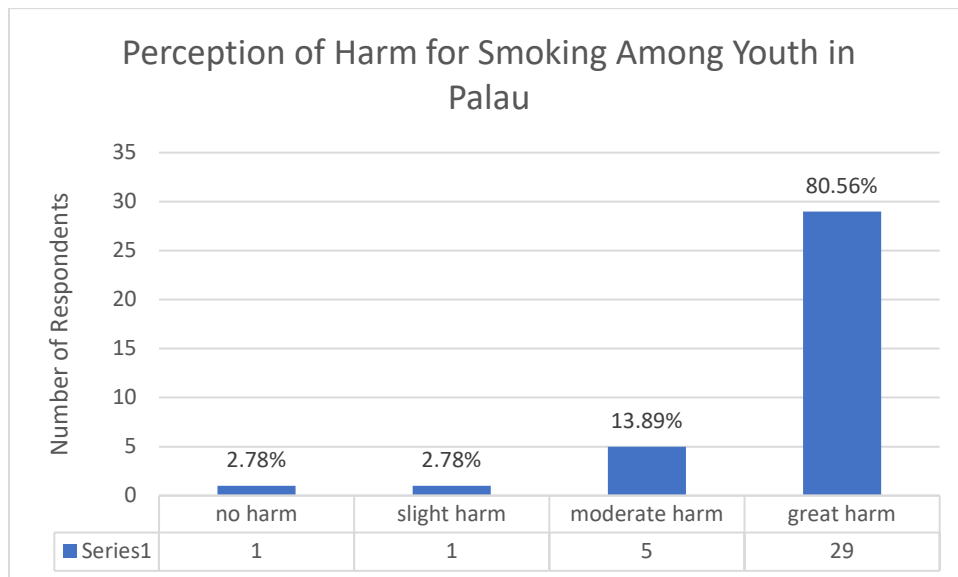


Figure 6. Participants' Perception of Harm for Smoking

Figure 7 shows the perception of harm that participants believe chewing betel nut with tobacco will cause to the user. Although 92% of participants believe that chewing betel with tobacco will cause any type of harm to the user, the distribution of proportions is quite different from Figure 6. When asked regarding the harm of chewing betel with tobacco, 44.4% of respondents believed that this behavior causes great harm; 25.0 % believed that chewing betel with tobacco caused moderate harm; 22.2% believed it caused slight harm; and 8.3% believed that chewing betel with tobacco caused no harm at all.

Figure 7. Participant's Perception of Harm for Chewing Betel Nut with Tobacco Added

Figure 8 depicts the participants' perception of harm from inhaling second hand smoke. Approximately 92% of participants believe that inhaling or being exposed to second hand smoke causes some form of harm to the individual. The majority of respondents believed that inhaling second hand smoke causes great harm to the smoker (52.8%); 22.2% believed that second hand smoke causes moderate harm; 16.7% believed that second hand smoke causes only slight harm; and 8.3% of respondents believed that second hand smoke causes no harm.

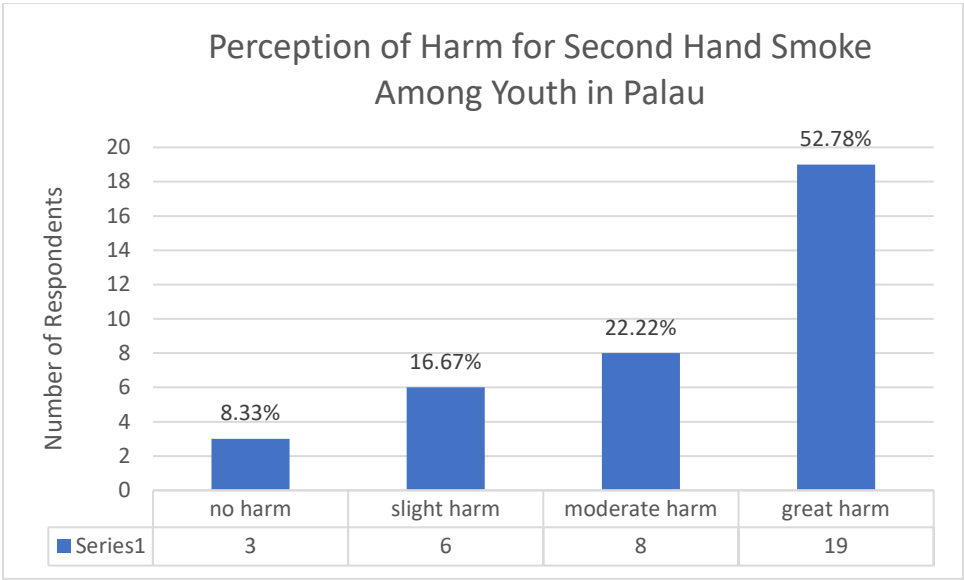


Figure 8. Participants' Perception of Harm for Second Hand Smoke

As shown in Figure 9, participants responded with their comparison of harm perception between smoking cigarettes and chewing betel nut with tobacco. All of the participants believed that either smoking or chewing betel with tobacco caused some

amount of harm. The majority of youth however (69.4%), believed that smoking is more harmful of the two tobacco consumption methods. Approximately 22.2% believed that smoking and chewing betel nut with tobacco caused the same amount of harm and 8.3% believed that chewing betel with tobacco was more harmful.

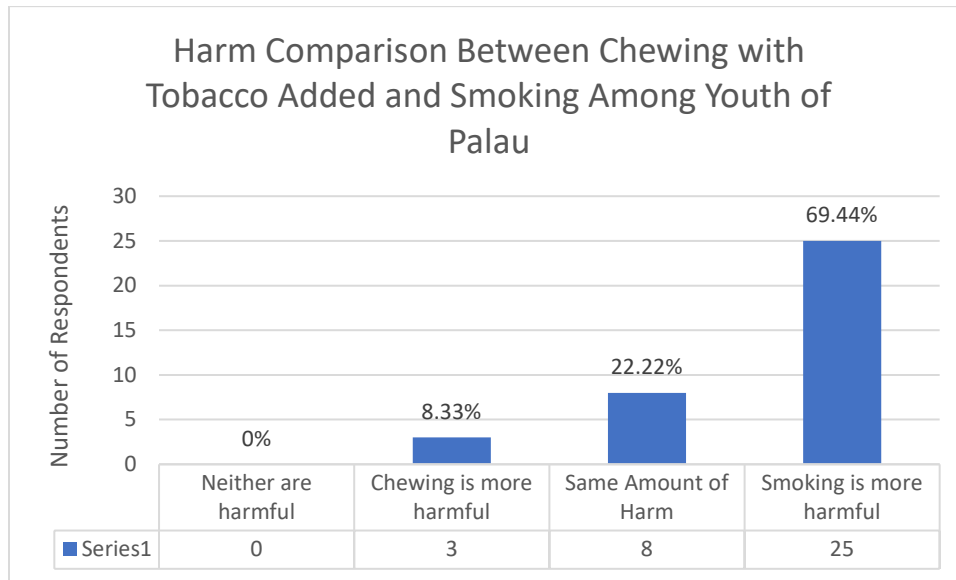


Figure 9. Participants’ Perception of Harm Comparison Between Smoking Cigarettes and Chewing Betel Nut with Tobacco

3.2 Relationship Between Demographic Characteristics and Tobacco use Behavior

This section examines the relationship between the characteristics of the target population as well as their tobacco exposures with tobacco use behaviors. Because the sample size was small (N=39) and the sample did not follow a normal distribution, Fisher’s exact test was used to discover significant relationships between the dependent and independent variables.

The majority of younger age groups such as the 9 to 10 years (88.9%) and 11 to 12 years (77.8%) tended to be never users of tobacco. Tobacco ever use behavior increased as the age groups increased with 66.7% of the 13 to 14-year-old category and 88.9% of the 15 to 16 year old category reporting to have ever used tobacco. Fisher’s exact test result

showed that the relationship between respondent age and tobacco use was statistically significant ($p < 0.01$).

As can be seen in Table 4, the majority of respondents who had at least one friend who engaged in tobacco use behavior also themselves engaged in tobacco use behavior (57.1%). However, it is interesting to also note that 100% of the participants who did not have a friend who engaged in tobacco use behavior did not engage in any tobacco ever use themselves. The result of Fisher's exact test showed that there was a significant relationship between having at least one friend who is a tobacco user to respondent tobacco use behavior ($p < 0.01$). Other variables such as the state of respondent origin, gender, familial tobacco use, as well as ease of tobacco acquisition did not show any statistical significance.

Table 3. Cross-tabulation and Relationship of Demographic Characteristics with Tobacco Ever Use

Variable	Whole Sample	Tobacco use		P-Value (Fisher's Exact)
		No	Yes	
	N	N(%)	N(%)	
Total	39			
Respondent Age in Years				0.004
9-10	9	8(88.9)	1(11.1)	
11-12	9	7(77.8)	2(22.2)	
13-14	6	2(33.3)	4(66.7)	
15-16	9	1(11.1)	8(88.9)	
17-18	6	3(50)	3(50)	
Gender	36			1.000
Male	18	10(55.6)	8(44.4)	
Female	18	11(61.1)	7(38.9)	
State	34			0.901
Kayangel	0	0(0)	0(0)	
Aimeliik	0	0(0)	0(0)	
Airai	4	1(25)	3(75)	
Melekeok	1	1(100)	0(0)	
Ngaraard	2	1(50)	1(50)	
Ngarchelong	3	2(66.7)	1(33.3)	
Ngardmau	1	0(0)	1(100)	
Ngeremlengui	0	0(0)	0(0)	
Ngatpang	0	0(0)	0(0)	
Ngchesar	1	0(0)	1(100)	
Ngiwal	1	0(0)	1(100)	
Anguar	7	4(57.1)	3(42.9)	
Koror	3	2(66.7)	1(33.3)	
Peleliu	1	1(100)	0(0)	
Hatohobei	0	0(0)	0(0)	
Sonsorol	10	0(0)	0(0)	

Table 4. Cross Tabulation and Relationship of Social Exposures with Tobacco Use

Variable	Whole Sample N	Tobacco Use		P-Value (Fisher's Exact)
		No N(%)	Yes N(%)	
Total	39			
Family Tobacco Use	39			0.139
Yes	30	14(46.7)	16(53.3)	
No	9	7(77.8)	2(22.2)	
Friend Tobacco Use	30			0.004
Yes	21	9(42.9)	12(57.1)	
No	9	9(100)	0(0)	
Ease of Acquiring Tobacco	30			0.058
Very Easy	7	3(42.9)	4(57.1)	
Somewhat Easy	10	4(40)	6(60)	
Not Easy	13	11(84.6)	2(15.4)	

Quantitative Summary

This study found that the main reasons for tobacco initiation among youth in Palau to be peer pressure (50%) and curiosity (27.8%). The majority of participants who ever used initiated before they were 12 years old. Those who use tobacco were in the company of at least one other person during their last use and more likely to have at least one friend who uses tobacco. Store bought cigarettes were found to be the most common type of tobacco consumed. However, the majority (at least 90%) of participants

in the study believed that smoking, betel chewing with tobacco and second-hand smoke causes at least some form of harm. Finally, it was discovered that 75% of the participants had attempted tobacco cessation between one and six times.

3.3 Qualitative Data

3.3.1 Ethnography and Field Observations

Part of my study included careful documentation of interviews of both adults and minors. Though there was not a structure to these interviews, there were common themes that occurred within the responses of both adults and minors.

3.3.1.1 Interviews

Palauans are very open to talk about the use and the role tobacco plays within the culture of Palau as well as use of tobacco by children and young people aged 18 years old or below. There are a few common themes which emerged from these field interviews. These themes are

1. Chewing Betel Nut with Tobacco
2. Attitudes and Beliefs of Tobacco Use
3. Tobacco Use Initiation and Acquisition

3.3.1.2 Chewing Betel Nut with Tobacco

When interviewed, older Palauans over the age of 30 agreed it is historically and culturally important to chew betel nut (with or without tobacco). This is seen as an act of cultural preservation to these same individuals. Making a betel chew is known as “fixing a chew” or sometimes just “fixing”. When “fixing” a chew there are normally four main

ingredients which go into the finished product: betel nut, lime powder, tobacco (usually broken cigarettes), and sometimes pepper leaf (known as “Gebui”). There are many ways to “fix” a chew and interviewees mentioned that everybody has their own preference and extra components they may add to their chew (aside from the typical four mentioned above).

3.3.1.3 Attitudes and Beliefs of Tobacco Use

Each of the older interviewees could recall the most popular brands of tobacco in Palau. There was a clear distinction between store-bought cigarettes and chewing tobacco. The most preferred brand of store-bought cigarettes are Carnival, Doral, USA Gold, and finally Marlboro, in descending order of popularity. Although, there was another brand which was mentioned, White Crocodile, which one interviewee said was a Palauan brand of cigarette. Though these interviewees did not chew tobacco they could recall the most popular brand of chewing tobacco was Redman. Other youths also recounted that sometimes their peers may mix tobacco with marijuana in order to get a greater “high”. Therefore someone who may have started with smoking only marijuana may also add in tobacco to increase the effects of smoking marijuana.

3.3.1.4 Tobacco Use Initiation and Acquisition

Overall, most of those interviewed agreed that many people begin tobacco use because due to family. Many cited the reason for beginning tobacco use is because their family also chews. One health worker stated that children can start as young as 10 years old. Another health worker also recounted that is possible that children as young as four

years old begin chewing and later lead to tobacco use. Both adult and minor interviewees stated that middle schoolers may obtain tobacco through stealing and pass it along to their friends.

One underage male interviewee reported that sometimes in the past, children will fix a chew for their grandparents. Because the grandparents' teeth aren't strong enough to chew, the children must first soften up the chew- by chewing it themselves. This may be a way in which young people may be introduced to tobacco.

3.3.2 Focus Group Discussion

Through qualitative analysis in Nvivo, three major themes were identified within the data. These three themes include:

1. Different methods of tobacco acquisition
2. Perception of harm and effects of tobacco use
3. Possible reasons for tobacco initiation

3.3.2.1 Different Methods of Tobacco Acquisition

I found that there are many ways that young people acquire tobacco in Palau. The focus group discussions provided insights in to these multiple acquisition patterns: obtaining from friends and family members, obtaining from the store, and purchasing cigarettes from peers.

Friends and Family Members

Family and friends were often described by participants in the focus groups as one of the main sources of tobacco for the youth of Palau. With regard to family as the main

source of tobacco acquisition there were three ways cited within the focus groups as how the youth obtain tobacco or cigarettes. The first method mentioned was that it was a common occurrence for young people to steal tobacco (mainly cigarettes) from their parents or family members. When asked how the youth most commonly obtain tobacco a respondent answered, *"They probably steal from their parents"*. Another participant answered, *"like if their parents let them chew and they can go into their [parents] bag and they can chew or they steal."* This indicates that whether or not the parent approves of the tobacco use behavior, the young person may still obtain the tobacco through any means necessary.

Aside from stealing the tobacco from parents, sometimes youth are encouraged to use tobacco, or their tobacco use is facilitated by relatives. As mentioned above, sometimes the relatives who already engage in tobacco use behavior will facilitate or create an environment conducive to tobacco use behavior in the younger relatives. One participant responded, *"the ones that already smoke like they say that I've been through your age so I understand once you go out you're gonna do this stuff so they are okay with it"* when referring to those who buy tobacco for their younger relatives. Through the focus groups it was clear that a common method of tobacco acquisition was an older friend or family member buying tobacco for the younger individual. One respondent commented, *"instead of getting airtime (internet access card) on special occasions they give you a tet (betel nut chew bag) or they buy you a cigarette."* This shows that sometimes giving tobacco to

younger relatives can be viewed as a social significant or sometimes a cultural act (in the way of giving a tet).

Obtaining from the Store

Another commonly cited method of how youth acquire tobacco is from the “mom and pop” stores or the convenience shop owners. Contrary to what is outlined in the guidelines of the WHO Framework Convention for Tobacco Control (FCTC), sometimes these stores will sell cigarettes to children or sell cigarettes individually. It was clear from the focus groups that it is very seldom that children are checked for their age when purchasing cigarettes, especially if they are older looking. This notion was corroborated by other participants who often knew of others who engaged in such acts. One participant commented, “*For obtaining cigarettes from the store owners. They will give you cigarettes because they are scared of what if you beat them up or tell the police that this store is selling tobacco to the underage so they end up giving you the tobacco*” In some cases, the Palauan youth may threaten store owners if they did not sell cigarettes to them. After selling cigarettes to the young Palauans, some young people would gain more leverage in purchasing tobacco against the shop owners by threatening to report them for selling to minors.

Purchasing Cigarettes from Peers

The youth in Palau may also come together to share their allowance money to purchase and share cigarettes with each other. This seems to be a widespread occurrence through many of the schools in communities within Palau. In lieu of this, many

participants also commented that tobacco is being sold to the young population at many of the schools as well as within the communities. One of the respondents stated, *“what they do in my school is that the smokers that came up with the idea they give it to the non-users to sell and at the end of the year they split the profit.”* Many of the participants debated how the price of cigarettes have increased through the years in relation to the perceived demand of tobacco within the school-aged population. Another participant commented, *“Yea the demand got higher. Used to be 25 cents, 50 cents, now I’m hearing a dollar, it could be 1.50 next year.”* This may suggest that the problem of tobacco exposure and access within the younger population may already be longstanding and widespread, not only in the communities but also in the schools.

3.2.2.2 Perception of Harm and Tobacco Use

The majority of focus groups participants expressed some knowledge on the harms of tobacco use. Many respondents could name at least one negative health effect from the use of any form of tobacco (such as smoking or chewing). There were however some misconceptions about different kinds of tobacco consumption. One respondent stated, *“When you smoke cigarette it is putting nicotine in your body while when you chew you are spitting it out”* This shows that while knowledge of the harms of tobacco is generally high, there are still misunderstandings about the dangers of chewing tobacco compared with smoking tobacco. This misconception is consistent with the survey responses reported earlier in Figure 5 in which participants considered smoking to be more harmful than chewing betel with tobacco added. Another misunderstanding

which was stated within the focus group was that secondhand smoke is more harmful than the act of smoking because “The person who is actually smoking cigarette does not get affected but the person who is beside him does get effected because he is the one who inhaled the smoke.” Though the participant understood that smoking can be harmful, there was still some misconception regarding the relative harm of smoking and second-hand smoke exposure. Most of the respondents were also able to link tobacco use behavior to negative health outcomes such as lung disease, discoloration of teeth, as well as different types of cancers. When prompted as to what some of the differences between tobacco users and non-users, the participants stated these same health reasons as to why some peers do not engage in tobacco use behaviors.

Possible reasons for tobacco initiation

A common reason between the three focus groups for possible reasons why younger people initiate tobacco use is due to family influence. One participant commented, *“The parents are strict so they don’t want them to chew or smoke tobacco so they tell them not to but then the kids will wonder why you’re telling me not to do this but yet you’re doing this so it makes a kid curious, so they may go behind their parent to steal tobacco.”* Many of the participants corroborated this notion that the younger generation often sees the older generation (such as parents, older cousins, siblings, and grandparents) use tobacco and initiate tobacco use out of curiosity. Sometimes family members will even encourage the younger generation to try betel chew with tobacco and afterwards, the individual becomes a tobacco consumer.

Another common reason for tobacco initiation is due to social status and peer pressure. Many respondents stated that some reasons as to why young people might begin to smoke is due to smoking being perceived as a “cool” action. One participant explained, *“When you hang out and when your friends light up a cigarette and you want to continue to play with them you continue to be with them, you light up a cigarette.”* Other respondents explained that they will engage in smoking behavior if their other friends start to smoke due to the fear of being ostracized or left out of the friend group.

One male participant stated betel nut chewing in Palauan culture as the reason for tobacco initiation behavior. This participant explained, *“it’s culturally appropriate to chew because it’s part of our traditions and customs so at a certain age men start chewing and at a certain age women start chewing it’s the fact that chewing starts off conversations and important discussions.”* Therefore, the use of tobacco within Palau may not be generalized only to recreational use but also holds deep social and cultural nuances as well.

3.2.2.3 Qualitative Summary

It was found that family and friends were the most common sources of tobacco acquisition and reason for initiation. Culture was also found to be a significant factor in why young people engage in chewing betel with tobacco. Although knowledge regarding the harms of tobacco are relatively high, there are still misconceptions regarding tobacco use.

4. Discussion

This is the first study which both quantitatively and qualitatively explores the possible determinants of tobacco initiation among the youth of Palau who are under 19 years old. In this cross sectional mixed methods study demographic variables and social tobacco exposures were measured with tobacco ever use.

With regard to the study participants, a majority of respondents reported their reason for initiation was due to peer pressure. Social pressures and social status were found to be major determinants in both the survey and focus group discussion of this study. As mentioned previously, within the focus groups, some participants had reported using tobacco simply because their friend had also engaged in tobacco use. In a study performed by Aura, Laatikainen, Isoaho, Lazutkina, and Tossavainen (2016) the researchers also found that social pressures played a significant role in the initiation of tobacco among youth in Finland and Russia. Specifically, young people who have at least one best friend who engaged in tobacco use was a significant risk factor for tobacco initiation. Consistent with these findings is another study conducted by Hoffman et al. (2006) which theorized that adolescents are particularly susceptible to tobacco initiation from peer pressure. This is because during younger ages, adolescents tend to place much value on social inclusion and formation of one's identity. Within this paradigm, a young person who is with a friend that is smoking will be extremely likely to also engage in this behavior due to social pressures and perceived social acceptance or

support of smoking. Hoffman and colleagues go on to suggest that banning smoking on school grounds is not a sufficient method to eliminate adolescent smoking.

Furthermore, approximately 55.6% of the participants of this study were found to initiate tobacco at 12 years old or younger. Consistent with the findings of our study, a report released by the surgeon general reported that approximately 90% of daily smokers in the United States and related areas began tobacco use behaviors in adolescence (U.S. Department of Health and Human Services, 2012). The possible explanation for the findings of our study can be seen in the data collected from the focus group discussions. First, that the tobacco sales within the school environment are quite prevalent and raise the perceived social acceptance of tobacco use behaviors. Secondly, family members are using tobacco at home and the exposure to tobacco use has resulted in learned tobacco use behavior from the elder family member. Third, family members who use tobacco at home expose other family members to second hand smoke.

It is interesting to note while 80% of respondents believed that smoking causes great harm to the individual, a lesser number, or 52% believed that second hand smoke caused great harm to the individual. Only 44.4% believe that chewing betel nut with tobacco caused great harm. A great majority (69.4%) of respondents also believed that smoking causes a greater amount of harm to chewing betel with tobacco. Interesting to note that this may suggest that the young people are perceiving the actual smoke as the harmful agent rather than the nicotine or the other carcinogenic substances which are found within tobacco.

The research results showed that only 8.3% of respondents believed that chewing betel with tobacco and 8.3% of respondents believed that second hand smoke caused no harm. Consistent with this qualitative data finding are the findings within the qualitative portion of this study. The amount of harm perception decreases when comparing smoking and chewing betel nut with tobacco. Interesting to note however, that some respondents believed that chewing betel was less harmful because the individual spits out the nicotine rather than inhaling the smoke and nicotine into the lungs via smoking. Despite the fact that knowledge and perception of harm is relatively high within the youth of Palau, the youth may benefit from educational interventions. Even though knowledge about the harms of tobacco were high, there were still misconceptions about the dangers of tobacco depending on the method of consumption (chewing versus smoking).

There are many of ways that young people in Palau obtain tobacco. Family served not only as a risk factor for tobacco initiation but was stated as a major factor in tobacco acquisition as well. This is consistent with a study conducted by Kabir, Goh, and Khan (2007) where researchers found that seeing others smoke at home was significantly associated with higher likelihoods of adolescent tobacco use.

Policy Recommendation

For my brief study here are some policies which I hope the Ministry of Health will consider.

Policy makers could consider how smoking and tobacco use fits into the culture of the young persons and address the issue of tobacco use from a social-cultural perspective. Tobacco use has an apparent social connotation amongst friend groups and peers. One policy recommendation could be to enact peer advocates such as encouraging influential people of the student body to discourage tobacco use. From a policy standpoint, it could be effective to accept these peer advocates as interns for the Ministry of Health. After the fact, new interns could be accepted every year creating a steady growing base of peer health educators and advocates within the young population. Within this vein of educational interventions, it is poignant to note the difference of gender status in Palau. It is very important to acknowledge that Palau is a matrilineal society. From my ethnographic observations it was inferred that Palau is historically a matrilineal society however males may also hold positions of power. Informal structures of gender-based power distribution do not supersede formal hierarchies of power within governmental institutions. However, females are still historically viewed as the more powerful of the two genders in terms of status and kinship. It may be more effective to instate future educational interventions with female moderators (giving the health lectures) as females are still viewed with authority.

In order ameliorate this risk factor of social exposure by older family members, the Ministry of Health may seek to implement educational intervention on tobacco cessation to lower the prevalence of tobacco users in the adult population. This methodology would be a more top down approach from the older generation to the

younger generation instead of directly targeting the youth. Many of the respondents in the focus group commented that they are influenced to use tobacco because they see older family members using tobacco or are encouraged by said family members to use tobacco. Simply targeting the youth would possibly result in a lower efficiency outcome as they would always suffer from the family influence risk factor. Therefore, by decreasing the prevalence of adult tobacco behavior and possibly the younger population by extension.

Tobacco sales are prevalent in the schools and the communities. This issue is much harder to address as there is already a no tobacco policy instated within the schools. Though as mentioned in the Hoffman study, simply instating this policy may not be sufficient to rid these schools of tobacco. In a study performed by Schneider et al. (2014) in Needham, Massachusetts, overall prevalence of tobacco purchases by youth decreased after increasing the minimum smoking age to 21. This also prevents underage individuals from purchasing tobacco and also distributing or selling tobacco to their peers.

Although sometimes shop keepers do not always adhere to tobacco regulations which are imposed by the state (such as FCTC regulations). Therefore, it may be beneficial for stricter regulation of tobacco sales, particularly at point-of-sale locations such as “mom and pop” shops and convenience stores. Imposing a heavy fine or temporary suspension of tobacco license for tobacco regulation infractions may further serve to disincentivize the illegal sale and distribution of tobacco to underage persons.

Another recommendation may be to further increase the price of tobacco and thereby decreasing the affordability of tobacco products for both adults and the younger population. This would serve to not only decrease the profit margins of those selling to their peers at school but also may serve as an impetus to adults in way of smoking cessation. Therefore, by curbing the tobacco use of adults, the younger population may also suffer less exposure by family members and in the household.

4.1 Study Strengths and Limitations

One particular strength lies in the triangulation of data utilizing both the quantitative and qualitative methods. The qualitative data collection and analysis was able to provide depth to the analysis gathered from the quantitative data. An example of triangulation can be seen within the family social exposure to tobacco use. The survey portion indicated that a large portion of participants within my study had family who used tobacco. This finding was later corroborated within the focus group discussion and interviews. Not only did the qualitative data provide validation but also provided context as to why this family tobacco exposure occurred. In addition, training the local community health workers in leading focus groups allowed for seamless transition between English and Palauan should the need for translation arise. This also put the younger participants at ease to speak in whichever language they felt more comfortable to contribute in. The PI also worked with the local community health workers to develop and adapt questions from tobacco surveys to be more culturally sensitive and appropriate. In addition, the PI was able to pretest the survey before implementation in

order to ensure any issues with the questionnaire were fixed before implementation. Finally, to the best of this author's knowledge, this is the first mixed methods study to both qualitatively and quantitatively explore the determinants of tobacco use among young people in Palau. Therefore, this study serves to fill a gap in data concerning tobacco use in Palau and may serve to inform future health interventions regarding tobacco cessation among the youth of Palau.

Some of the study limitations include first and foremost the small sample size and non-random sampling was utilized for this study. This could have resulted in sampling bias. Secondly, the data was self-reported which will run the risk of report-bias. With self-reported data there is always the chance that participants may not have answered truthfully but in accordance to what they believe the researcher wanted to hear. Finally focus groups were given by different interviewers. Interviewers may differ in tone, and the phrasing of a question. This may introduce interviewer bias and affect how respondents answer the focus group questions. Although it is important to note that to protect against this bias, the staff were trained and followed the same written guidelines for each focus group session. This would allow for the moderator to give the prompt in the same way each other moderator would as to standardize the delivery of the questions and probes. In addition, I also served as either the primary moderator or co-moderator during each focus group to ensure that each question was being asked according to the training and that the discussion stayed relevant. Another limitation faced within this study was the timing. During the time that this study was conducted,

many of the young people were on vacation either to other islands or to the United States. As school was not in session at the time of the study, it was difficult to locate areas with a large concentration of young people.

4.2 Recommendations

From this study we concluded that effective studies may utilize a more biocultural approach when exploring tobacco use within Palau or other countries. Conducting health interventions without first exploring biocultural reasons may be too narrow a focus. However, when framed through a biocultural approach, the intervention may be more culturally appropriate and effective. Within the context of Palau however, future researchers may consider learning about how tobacco plays a role within Palauan culture and practice before conducting interviews or observations. There were moments when Palauans were surprised at my knowledge of tobacco use culture and thusly, more willing to open up about their tobacco use and that of their peers. Many foreign researchers conduct their studies within Palau without ever learning the culture and language. This makes Palauans very suspicious about the true intentions of these researchers. Learning the Palauan language will also enable researchers to seem less threatening and more approachable. It is also important to build relationships and foster good collegueship with the Public Health entities in Palau. This includes the members of the Ministry of Health, local educational facilities, sub-branches of the Ministry of Health, as well as the Palauan IRB. These entities have recounted to me many times where other researchers have conducted their research and did not give

local Palauans who assisted them any credit. This in turn negatively affects both the research community as a whole, but also makes Palauans wary of outside health assistance.

4.2.1 Implications for future research methodology

Tobacco control is only one of the many facets of non-communicable disease control which is covered in the national NCD prevention plan. High obesity rate is another major problem which plagues Palauan children which may lead to future associated complications (Palauan MOH, 2015; Palauan MOH, 2016). One methodology from this study which may be useful to use in future interventions or studies is the ethnography. Though only the ethnographic interview was used for this study, ethnography includes a multitude of different methods. Ethnography includes observations, materials from the Palauan Ministry of Health (and associated subdivisions), and other materials or noted events within the country. The importance of utilizing ethnographic methodology enables the researcher to provide context to certain health behaviors. In this way, researchers may be able to understand the preventive or risk factors for obesity within the context of Palauan culture. Some examples of this may include health interventions on diet and eating habits. It may be easy to attempt to create a health intervention solely on what interventions worked to reduce obesity in other countries. However, the effect of the intervention would be greater to tailor the dieting to what type of food is prevalent in Palauan culture. In addition, it would also be imperative to consider in what situations or special events which Palauans will eat and

create a behavior intervention which compromises on these cultural events instead of trying to change habits altogether. In this way Palauans will not feel you are trying to change their culture or tradition but working with them to achieve a positive health outcome.

5. Conclusion

This study served to provide a few conclusions regarding the determinants of tobacco initiation within the youth of Palau. First, that family influence plays a major factor not only in the initiation of tobacco but also in the acquisition of tobacco. Secondly, that even though knowledge surrounding the negative health effects of tobacco may be high, there may still be misconceptions regarding these health risks. Especially between different kinds of tobacco consumption methods. Third, that there are many ways in which a young person may obtain tobacco in Palau such as through family or purchasing for oneself. And finally, that tobacco can be very intrinsically tied with the social culture of young people. Therefore, in order to successfully implement any tobacco cessation methodology; future researchers must first consider the role which tobacco plays in the culture of young people in Palau.

Overall, it may be effective for policy makers to consider the social ecological theory when legislating new policies regarding tobacco. It is important to first consider the reciprocal relationship between each level of the SEM and how a biocultural approach may be useful in determining effect public health legislation. Perhaps most important is how culture frames each level of the SEM and approaching tobacco

legislation from purely public health standpoint may not be most effective. Culture can certainly play a role in policy making and the environment of tobacco in Palau. Policy makers may consider the role of tobacco in the history and culture of Palau and make recommendations which can preserve cultural practice without affecting historical preservation. Culture can also play a large role in intrapersonal relationships, particularly that between family members. Because older family members may want to uphold cultural practice, they may introduce a younger member to tobacco use. Steps can be taken to target this level of the SEM while still remaining culturally sensitive. Finally, culture and biology may play a large role within the individuals decision making. Tobacco dependency is a biological phenomenon and can be instrumental in influencing the thoughts and actions of an individual. As seen in the results above, nearly 24% of participants had attempted to quit smoking seven times or more. Culture can also play a role in the individual's decision processes of tobacco use. As mentioned by a focus group participant, tobacco use can be a signal of a certain age threshold. Tobacco use and the culture of tobacco or chewing may be a significant factor within the development of identity for the young individual.

The use of the biocultural approach in this study is useful not only for framing the surveys and focus group strategies, it is also useful in developing policy alternatives for Palau. Framing health decisions and behaviors within the biocultural approach gives a more holistic view of the problem overall. It is important to consider that culture is not inclusive of only Palauan culture but also stratifies through multiple societal levels such

as: culture among different age groups, political alignment, or even socioeconomic status. Through the use of the biocultural approach one may be able to frame health issues from the context of the local environment.

Appendix A- Questionnaire

The survey you are about to take is about tobacco. Some questions are adapted from the United States Center for Disease Control 2015 National Youth Tobacco Survey. We would like to know more about tobacco use here in Palau. The answers given in this survey may be used for programs for young people such as yourself.

Please do NOT write your name on this survey. Any answers given on this survey will be confidential. This information is only for the researcher.

As answers are kept private, nobody will know what answers you put down. Please answer truthfully and to the best of your knowledge.

This survey is completely voluntary. Whether or not you answer the questions will not affect your school work or any class. I will use the information collected from the questionnaire primarily for my own study and thesis. Information collected will also be used by the government to better health conditions and outcomes in Palau.

Please answer all questions if possible. If there is a question you do not wish to answer, please leave it blank.

The questions regarding background are only used to get a measure of the types of students which are taking and completing the survey. This information will not be used to find out your name. As previously stated, all answers will be kept private.

The next 5 questions are about your background	
1. How old are you?	Age: _____ Years Old
2. When is your Birthday?	Date: Day _____ Month _____ Year _____
3. What is your gender?	<input type="checkbox"/> Male <input type="checkbox"/> Female
4. What Grade will you be in?	<input type="checkbox"/> 3 rd grade <input type="checkbox"/> 4 th grade <input type="checkbox"/> 5 th grade <input type="checkbox"/> 6 th grade <input type="checkbox"/> 7 th grade <input type="checkbox"/> 8 th grade <input type="checkbox"/> 9 th grade (high school freshman) <input type="checkbox"/> 10 th grade <input type="checkbox"/> 11 th grade <input type="checkbox"/> 12 th grade <input type="checkbox"/> 13 th grade (college freshman) <input type="checkbox"/> Ungraded or in other grade, Please Specify _____
5. What nationality do you most identify with?	<input type="checkbox"/> Palauan <input type="checkbox"/> Filipino <input type="checkbox"/> Japanese <input type="checkbox"/> Chinese <input type="checkbox"/> Bangladeshi <input type="checkbox"/> Other, Please Specify _____
6. Which state do you come from? (Choose all that apply)	<input type="checkbox"/> Kayangel <input type="checkbox"/> Aimeliik <input type="checkbox"/> Airai <input type="checkbox"/> Melekeok <input type="checkbox"/> Ngaraard <input type="checkbox"/> Ngarchelong <input type="checkbox"/> Ngardmau <input type="checkbox"/> Ngeremlengui <input type="checkbox"/> Ngatpang <input type="checkbox"/> Ngchesar <input type="checkbox"/> Ngiwal <input type="checkbox"/> Anguar <input type="checkbox"/> Koror <input type="checkbox"/> Peleliu <input type="checkbox"/> Hatohobei <input type="checkbox"/> Sonsorol

7. Do you speak a language other than Palauan at home?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7 A. If yes, what language to do you speak? (Choose all that apply)	<input type="checkbox"/> English <input type="checkbox"/> Tagalog <input type="checkbox"/> Chinese (Mandarin) <input type="checkbox"/> Chinese (Cantonese) <input type="checkbox"/> Korean <input type="checkbox"/> Japanese <input type="checkbox"/> Other, Please specify _____
These next few sections are about use of tobacco products or smoking behavior	
8. Have you ever used tobacco, if smoking tobacco, even one puff?	<input type="checkbox"/> Yes <input type="checkbox"/> No (If No skip to Question 20)
9. What is the main reason you started using tobacco?	<input type="checkbox"/> Peer pressure <input type="checkbox"/> Family uses tobacco <input type="checkbox"/> Curiosity <input type="checkbox"/> I like the taste <input type="checkbox"/> To relieve stress <input type="checkbox"/> Another reason, Please Specify _____
10. How old were you when you first tried any tobacco product?	<input type="checkbox"/> 8 years old or younger <input type="checkbox"/> 9 years old <input type="checkbox"/> 10 years old <input type="checkbox"/> 11 years old <input type="checkbox"/> 12 years old <input type="checkbox"/> 13 years old <input type="checkbox"/> 14 years old <input type="checkbox"/> 15 years old <input type="checkbox"/> 16 years old <input type="checkbox"/> 17 years old <input type="checkbox"/> 18 years old
11. What is the most common way you have use tobacco?	<input type="checkbox"/> Smoke cigarettes <input type="checkbox"/> Smoke loose leaf tobacco <input type="checkbox"/> Chewing tobacco <input type="checkbox"/> Betel nut with tobacco added <input type="checkbox"/> Electronic cigarette /E-Cig or Vape <input type="checkbox"/> Other, Please Specify _____
12. Which of the following tobacco products have you tried (Choose all that apply)	<input type="checkbox"/> Store bought cigarette <input type="checkbox"/> Loose leaf tobacco (hand rolled cigarette or pipe) <input type="checkbox"/> Hookah <input type="checkbox"/> Chewing tobacco <input type="checkbox"/> Betel nut with tobacco added <input type="checkbox"/> Electronic Cigarette/E-Cig or Vape <input type="checkbox"/> Other , Please Specify _____

<p>13. In the past 30 days, which of these products have you used at least one day (Choose all that apply)</p>	<p><input type="checkbox"/> Store bought cigarette <input type="checkbox"/> Loose leaf tobacco (hand rolled cigarette or pipe) <input type="checkbox"/> Hookah <input type="checkbox"/> Chewing tobacco <input type="checkbox"/> Betel nut with tobacco added <input type="checkbox"/> Electronic Cigarette/E-Cig or Vape <input type="checkbox"/> I have never used any tobacco product in the past 30 days <input type="checkbox"/> Other, Please Specify _____</p>
<p>14. During the last time you used tobacco, were you alone (by yourself)?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>15. If you use tobacco, where are some places you have used tobacco? (Choose all that apply)</p>	<p><input type="checkbox"/> At school <input type="checkbox"/> At a friend's house <input type="checkbox"/> At home <input type="checkbox"/> At long island park <input type="checkbox"/> At KB bridge/Friendship bridge <input type="checkbox"/> In a car (driving or being driven in a car) <input type="checkbox"/> At the baseball field <input type="checkbox"/> At clubs/dance clubs <input type="checkbox"/> Other places, Please specify _____</p>
<p>16. Are your parents aware that you use (or have used) tobacco?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>The next two questions are about thoughts on quitting tobacco use</p>	
<p>17. Are you thinking about quitting any tobacco products?</p>	<p><input type="checkbox"/> Yes, within the next 30 days <input type="checkbox"/> Yes, within the next 6 months <input type="checkbox"/> Yes, within the next 12 months (1 year) <input type="checkbox"/> Yes, but not within the next 12 months <input type="checkbox"/> No, I am not thinking about quitting (Skip to Question 20) <input type="checkbox"/> No, I have not used tobacco more than once or twice (Skip to Question 20)</p>

<p>18. Please check which one of these you are trying to quit. (Choose all that apply)</p>	<p><input type="checkbox"/> Store bought cigarette <input type="checkbox"/> Loose leaf tobacco (hand rolled cigarette or pipe) <input type="checkbox"/> Hookah <input type="checkbox"/> Chewing tobacco <input type="checkbox"/> Betel nut with tobacco added <input type="checkbox"/> Electronic Cigarette/E-Cig or Vape <input type="checkbox"/> Other, Please Specify _____</p>
<p>19. During the past 12 months (1 year) how many times have you tried to quit tobacco use.</p>	<p><input type="checkbox"/> 1 to 2 times <input type="checkbox"/> 3 to 4 times <input type="checkbox"/> 5 to 6 times <input type="checkbox"/> 7 to 8 times <input type="checkbox"/> 9 to 10 times <input type="checkbox"/> More than 10 times <input type="checkbox"/> I did not try to quit tobacco products during the last 12 months <input type="checkbox"/> I did not use tobacco products during the past 12 months</p>
<p>20. Does any member of your house use tobacco products?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No (If no, skip to Question 23)</p>
<p>20A. If yes, is the house member male or female?</p>	<p><input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Both male and female members of my family use tobacco products</p>
<p>20B. Is this family member younger or older than you?</p>	<p><input type="checkbox"/> Younger <input type="checkbox"/> Older <input type="checkbox"/> Same Age <input type="checkbox"/> Both younger and older family members use tobacco products.</p>
<p>21. Who in your family uses tobacco? (choose all that apply)</p>	<p><input type="checkbox"/> Mother <input type="checkbox"/> Father <input type="checkbox"/> Grandmother <input type="checkbox"/> Grandfather <input type="checkbox"/> Sister <input type="checkbox"/> Brother <input type="checkbox"/> Uncle <input type="checkbox"/> Aunt <input type="checkbox"/> Cousin (female) <input type="checkbox"/> Cousin (male) <input type="checkbox"/> Other member, Please Specify _____</p>

22. What is the most common way tobacco is used by family?	<input type="checkbox"/> Smoking cigarettes <input type="checkbox"/> Dipping <input type="checkbox"/> Chewing betel nut with tobacco <input type="checkbox"/> Chewing tobacco
23. Do any of your friends use tobacco?	<input type="checkbox"/> Yes <input type="checkbox"/> No
24. If one of your friends were to offer you tobacco, would you use it?	<input type="checkbox"/> Definitely Yes <input type="checkbox"/> Probably Yes <input type="checkbox"/> Probably Not <input type="checkbox"/> Definitely Not
25. How easy would you say it is to obtain tobacco?	<input type="checkbox"/> Very Easy <input type="checkbox"/> Somewhat Easy <input type="checkbox"/> Not Easy at all
26. During the last 30 days, how did you get your tobacco products? (choose all that apply)	<input type="checkbox"/> Someone bought them for me (Skip to Question 28) <input type="checkbox"/> I asked someone to give me some (Skip to Question 28) <input type="checkbox"/> Someone offered them to me (Skip to Question 28) <input type="checkbox"/> I bought them from another person <input type="checkbox"/> I bought them from a store <input type="checkbox"/> I got them some other way, Please Specify _____ <input type="checkbox"/> I did not get any tobacco products in the last 30 days (Skip to Question 29)
27. During the past 30 days, where did you get tobacco from?	<input type="checkbox"/> A gas station <input type="checkbox"/> A convenience store (such as a Bangladeshi store) <input type="checkbox"/> A grocery store <input type="checkbox"/> From a friend or family member <input type="checkbox"/> Through a different way, Please specify _____
28. If you did not obtain tobacco yourself, who did you obtain the tobacco from?	<input type="checkbox"/> Mother <input type="checkbox"/> Father <input type="checkbox"/> Grandmother <input type="checkbox"/> Grandfather <input type="checkbox"/> Sister <input type="checkbox"/> Brother <input type="checkbox"/> Uncle <input type="checkbox"/> Aunt <input type="checkbox"/> Cousin (female) <input type="checkbox"/> Cousin (male) <input type="checkbox"/> Friend <input type="checkbox"/> Acquaintance (someone you know but do not consider a close friend)

The next questions are on your thoughts about the effects of different tobacco products	
29. How much harm do you think smoking causes to the user (the smoker themselves)?	<input type="checkbox"/> No harm <input type="checkbox"/> Slight harm <input type="checkbox"/> Moderate harm <input type="checkbox"/> Great harm
30. How much harm do you think breathing secondhand smoke causes? (breathing smoke from other people's cigarettes or tobacco product.)	<input type="checkbox"/> No harm <input type="checkbox"/> Slight harm <input type="checkbox"/> Moderate harm <input type="checkbox"/> Great harm
31. How much harm do you think chewing betel nut with tobacco causes to the chewer?	<input type="checkbox"/> No harm <input type="checkbox"/> Slight harm <input type="checkbox"/> Moderate harm <input type="checkbox"/> Great harm
32. How much harm do you think chewing betel nut with tobacco causes compared to smoking cigarettes to the user?	<input type="checkbox"/> Neither chewing betel nut with tobacco or smoking cigarettes cause harm <input type="checkbox"/> Chewing betel nut with tobacco is more harmful than smoking cigarettes. <input type="checkbox"/> Chewing betel nut causes the same amount of harm as smoking cigarettes <input type="checkbox"/> Smoking cigarettes is more harmful than chewing betel nut with tobacco
The next few questions ask about advertisements and promotions for tobacco products	
33. When you use the internet, how often do you see advertisements or promotion for tobacco products online?	<input type="checkbox"/> Always <input type="checkbox"/> Most of the time <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never <input type="checkbox"/> I do not use the internet
34. When you read magazines, how often do you see advertisements or promotions for tobacco products?	<input type="checkbox"/> Always <input type="checkbox"/> Most of the time <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never <input type="checkbox"/> I do not read magazines
35. When you watch television, how often do you see advertisements or	<input type="checkbox"/> Always <input type="checkbox"/> Most of the time <input type="checkbox"/> Sometimes

<p>promotions for tobacco products</p>	<p><input type="checkbox"/> Rarely <input type="checkbox"/> Never <input type="checkbox"/> I do not watch television</p>
<p>36. When you watch movies, how often do you see advertisements or promotions for tobacco products?</p>	<p><input type="checkbox"/> Always <input type="checkbox"/> Most of the time <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never <input type="checkbox"/> I do not watch movies</p>
<p>37. In what ways or where have you seen or heard tobacco or substance abuse prevention messages? (check all that applies)</p>	<p><input type="checkbox"/> Radio <input type="checkbox"/> T-shirts <input type="checkbox"/> Television <input type="checkbox"/> Newspaper <input type="checkbox"/> Facebook/Social Media <input type="checkbox"/> Hospital/ Community Health Center <input type="checkbox"/> Gas Stations <input type="checkbox"/> Supermarkets <input type="checkbox"/> Posters or banners around town</p>
<p>38. Which type of tobacco prevention messages do you feel are most helpful.</p>	<p><input type="checkbox"/> Positive messages that encourage you to stop tobacco use <input type="checkbox"/> Messages that warn about the dangers of tobacco use <input type="checkbox"/> Fact sheets or posters about tobacco use</p>

Appendix B – Focus Group Guide

Focus Group

Focus Group Semi-Structured Script

Introduction

Hello everybody! Today I welcome you to our focus group discussion. I would like to take this time to introduce myself and my assistant. My name is William Pu and my assistant today will be [Assistant's Name]. I am from Duke Kunshan University in China, and my assistant is from [Location] You were invited because you are within the age range of participants we wish to hear from. It doesn't matter whether you use tobacco or not. We are interested in how people in Palau start using tobacco, so if you don't use it you can still help us with the discussion.

Topics

The topic we will cover today will be about tobacco use and tobacco exposure. This means we will talk about things such as tobacco use, possible tobacco use by friends or people you know, as well as exposure to tobacco products such as advertisements. It does not matter if you use tobacco products or not, we simply want to hear your opinion and views regarding tobacco and possible use. The results of this study will be used in my graduate study thesis and possibly published in the future.

Confidentiality

Although the results will be public, I wish to assure you that we will not use names or anything that would let someone tell that it is you who gave the answers. Although the research team will never reveal any information to your peers, parents, teachers, or anybody else; we cannot guarantee the same for other participants of this focus group. We wish to ask those in the group to keep everything said in the focus group within the focus group and not to tell others or discuss topics or information given during focus group discussion outside of this group. Remember, you do not need to talk about anything during this meeting if you do not want to.

Guidelines

There are no right or wrong answers in our discussion, only different points of view. You do not need to agree with others but in order to foster an open conversation, you should listen respectfully when others share their views. We are audio recording this session because we do not want to miss any of your comments and often times we cannot write fast enough to get them all. After I transcribe the recordings, I will erase the audio files. To allow our conversation to proceed smoothly I would like to as that only one person speak at a time. Please do not feel like you have to answer every single question but I would like to hear from each of you today as the discussion progresses. We ask that your turn off your phones. If you cannot and if you must respond to a call, please do so as quietly as possible and rejoin us as quickly as you can. My role as the discussion group leader will be to guide the discussion and to keep it moving along. If

you have any questions regarding the study please let me know before we start or save them till the end. If you need clarification on a question please feel free to ask.

Please remember, that you are free to withdraw from the focus group at any time you wish. You may request that any part of the focus group may not be recorded. Please note however that written notes will be taken of the non-recorded part(s). Written notes will not include any identifying characteristics.

If there are no further questions or concerns, let us begin...

Guide for discussion:

- 1) There are some people your age that sometimes engage in tobacco use behavior such as smoking or chewing tobacco. Can you tell me some reasons as to why they do so?
- 2) Can you tell me some of the characteristics of people who use tobacco?
- 3) What are the most common ways that people use tobacco?
 - a. What are the most common ways that you or your peers use tobacco?
- 4) There are some that do not use tobacco in any way, are there reasons for this?
 - a. What are they?
- 5) What type of influences do you think these people have to start using tobacco?
- 6) Can you think back on a time when you or a friend started using tobacco?
 - a. Can you describe the experience to me?
- 7) How do you think people usually obtain tobacco?
- 8) Do any of you have family that might use tobacco, either smoking, chewing, or other types of tobacco use?
 - a. Are they older or younger than you are?
 - b. Are they male or female?
- 9) Do you think that their tobacco use has had an affect on you in any way?
- 10) How often do you see tobacco related products or advertisements?
 - a. What are the most common places to see these types of advertisements?
- 11) What do you feel when people around you are using tobacco?
 - a. Does this differ depending on the type of tobacco being used?
 - i. Such as smoking or chewing?
- 12) Do you think that people are harming themselves by using tobacco?
 - a. Do you think this causes you harm if you were around someone using tobacco such as smoking or chewing?
- 13) Of all the things we discussed about today, what do you think was the most important topic?

[After all the questions are asked]

[A brief summary is given to sum up the main ideas of the focus group.]

- Is this an accurate summary of what we talked about today?
- Do you think we have missed anything or is there anything you would like to discuss further?
- This will conclude our focus group. I would like to remind you not to discuss or talk about anything we have discussed in focus group today. Please help yourself to any refreshments if there are some left. Thank you so much for participating. If you have any questions or concerns, please let me know. I will provide a contact card for you.

Appendix C – Parental and Minor Consent Form



Parental and Minor Consent Form

Title: Determinants of Tobacco Initiation among Young People of Palau

Purpose:

This research project will aim to study the determinants of tobacco use initiation knowledge of tobacco, tobacco use, usage among peers, and exposure to tobacco in everyday life for the young persons of Palau. Your child/legal ward is invited to participate in this study because they are within the age criterion (9 years of age to 17 years of age) of the intended study population. Whether or not your child uses tobacco is not the reason why we request their participation in the study. Both you and your child must consent to take part in the survey.

Procedures:

The participants in the study will be asked to answer a series of questions on a survey regarding all the subjects mentioned in the previous section such as knowledge of tobacco, tobacco use, usage among peers, and exposure to tobacco in everyday life. The procedures will last for approximately 20 minutes.

Consent Procedure:

Youth (younger than 18 years of age) are required to sign a separate assent form and adults are required to sign a consent form before participation. The study is voluntary in nature and any participant may refuse or withdraw from the study at any time

Potential Benefits to Participants and Others:

There are no foreseeable benefits to the participants.

Risk/Discomforts:

For surveys, there is minimal to no risk of your information being revealed. We will take steps to ensure your data and identity remains anonymous.

Confidentiality:

Any information obtained during the study will be kept strictly confidential. According to the guidelines and rules of my university. I cannot reveal who has participated in my study or any information revealed in the study. All participant information will be coded so that data cannot be associated with any participant. No personal identifiable information will be contained within the file. Data will be collected by trained staff and certified project personnel. The resulting data will then be entered into a password protected computer by assigned code and accessible only to the primary investigator.

Compensation:

Your child/legal ward will receive a small gift (monetary value of \$5.00 USD) or less for participating in this project.

Compensation is given regardless if the participant decides to withdraw from the study. One compensatory gift will be given for participating in the survey (monetary value of \$5.00 USD).

Opportunity to Ask Questions:

You and your child/legal ward may ask any questions which may arise regarding any part of this research. These questions may be posed to the researcher or affiliated research associate before agreeing to participating or during the study. You may contact the investigator at the phone numbers below. All research with human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject, you may contact the committee, anonymously if you wish, at Duke Kunshan University Institutional Review Board or your local Institutional Review Board at Palau Community College.

Freedom to Withdraw:

Participation in this study is completely voluntary. You or your child/legal ward can refuse to participate or withdraw at any time without harming yours and their relationship with the researchers, their teachers, the school which has provided the permission for the research to be conducted, Duke Kunshan University, or in any way receive a penalty or less of benefits they are entitled to otherwise. Withdrawing from the research will also not affect the grade your child/legal ward will receive in this class in any way.

Consent, Right to Receive a Copy:

You are voluntarily deciding whether or not to allow your child/legal ward to participate in this research study. If you are the minor, Previous to participation, we will also obtain consent from your child/legal ward to be included within the research study. Your signature certifies that you have allowed your child/legal ward to participate, having read and understood the information presented in this consent form.

If you are the minor, by signing this document you are deciding to take part in our study. This means that you understand the information that was told to you on this form.

You may request a copy of this parental/legal guardian consent form to keep.

Name of Child to be Included

(Name of Minor: Please Print)

(Signature of Minor)

Date

Name& Signature of Parent/Legal Guardian:

(Name of parent/legal guardian: Please Print)

(Signature of Parent/Legal Guardian)

Date

Name and Phone Number of Investigator(s) and Other Contacts:

William Pu, Principal Investigator

Contact Number: 680 776 6335

Contact Email: William.Pu@duke.edu

Duke IRB

Contact Email: dku-irb@dukekunshan.edu.cn

The Prevention Unit

Contact Number: 680 488 8118/8119

Allan Burns, Research Supervisor

Contact Number: (+01) 352 870 1028

Contact Email: afb25@duke.edu

Appendix D- Adult Consent Form For Survey



Adult Consent Form for Survey Duke Kunshan University, China

Title: Determinants of Tobacco Initiation among Young People of Palau

Purpose:

This research project will aim to study the determinants of tobacco use initiation knowledge of tobacco, tobacco use, usage among peers, and exposure to tobacco in everyday life for the young persons of Palau. You have been invited to participate in this study because you are within the age criterion (18 years of age) of the intended study population.

Procedures:

The participants in the study will be asked to answer a series of questions on a survey regarding all the subjects mentioned in the previous section such as knowledge of tobacco, tobacco use, usage among peers, and exposure to tobacco in everyday life. The procedures will last for approximately 20 minutes. Participants may be selected to participate in focus group discussion to discuss knowledge of tobacco, tobacco use, usage among peers, usage among relatives and exposure to tobacco in everyday life. Focus groups will take approximately one hour each. Collected information may be analyzed and published but will never contain any information which may personally identify a participant.

Potential Benefits to Participants and Others:

There are no foreseeable benefits to the participants.

Risk/Discomforts:

Risks for this include potential violation of confidentiality; and possible discomfort in disclosing sensitive information. Possible discomfort or consequences resulting from breach of confidentiality to family, friends, and teachers. Possible discomfort from reporting abuse, neglect, and harm claims should participants experience them.

Confidentiality:

Any information obtained during the study will be kept strictly confidential. To do this all participant information will be coded so that data cannot be associated with any participant. No personal identifiable information will be contained within the file. The resulting data will then be entered into a password protected computer by assigned code and accessible only to the primary investigator.

Compensation:

You will receive a small compensatory item (monetary value of \$5.00 USD or less) for participating in this survey portion. The level of participation does not decide the monetary value of the compensation as all participants will receive the same compensation. Refreshments will be provided for focus group participants. Compensation is given at the start of participation and will be given regardless if the participant decides to withdraw from the study.

Opportunity to Ask Questions:

You may ask any questions which may arise regarding any part of this research. These questions may be posed to the researcher or affiliated research associate before agreeing to participating or during the study. You may contact the investigator at the phone numbers below. All research with human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject, you may contact the committee, anonymously if you wish, at Duke Kunshan University Institutional Review Board or The Prevention Unit

Freedom to Withdraw:

Participation in this study is completely voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers, your teachers, the school which has provided the permission for the research to be conducted, Duke Kunshan University, or in any way receive a penalty or less of benefits you are entitled to otherwise. Withdrawing from the research will also not affect your grade in any way.

Consent, Right to Receive a Copy:

You are voluntarily deciding whether or not to participate in this research study. Your signature certifies that you agree to participate, having read and understood the information presented in this consent form. You may request a copy of this consent form to keep.

Name & Signature of Participant:

(Name of Participant: Please Print)

(Signature of Participant)

Date

Name and Phone Number of Investigator(s) and Other Contacts:

William Pu, Principal Investigator

Duke IRB
The Prevention Unit
Allan Burns, Research Supervisor

Contact Number: 680 776 6335
Contact Email: William.Pu@duke.edu
dku-irb@dukekunshan.edu.cn
Contact Number: 680 488 8118/8119
Contact Number: (+01) 352 870 1028
Contact Email: afb25@duke.edu

Appendix E- Adult Consent Form For Focus Group



Adult Participant Consent Form for Focus Groups

Title: Determinants of Tobacco Initiation among Young People of Palau

Purpose:

This research project will aim to study the determinants of tobacco use initiation knowledge of tobacco, tobacco use, usage among peers, and exposure to tobacco in everyday life for the young persons of Palau. You have been invited to participate in this study because you are within the age criterion (18 years old) of the intended study population.

Procedures:

Participants may be selected to participate in focus group discussion to discuss knowledge of tobacco, tobacco use, usage among peers, usage among relatives and exposure to tobacco in everyday life. Focus groups will take approximately one hour each. Collected information may be analyzed and published but will never contain any information which may personally identify a participant. Focus groups will be audio recorded however you may request any portion or all of the focus group to not be recorded. Please note however that written notes will be taken of the non-recorded part(s). Written notes will not include any identifying characteristics.

Potential Benefits to Participants and Others:

There are no foreseeable benefits to the participants.

Risk/Discomforts:

There is a chance that what people in the focus group talk about may make you feel discomfort. Additionally, attendance to the focus group or information you reveal in the focus group may be disclosed by others in the group. As researchers, we will keep all information you reveal confidential but we cannot guarantee that from other participants in the group. Other risks include possible discomfort or consequences resulting from breach of confidentiality to family, friends, and teachers.]

Confidentiality:

Any information obtained during the study will be kept strictly confidential. To do this all participant information will be coded so that data cannot be associated with any participant. The resulting data will then be entered into a password protected computer by assigned code and accessible only to the primary investigator.

Compensation:

A small gift will be given to you for coming to focus group (monetary value of \$10.00 USD or less) (This particular gift you are receiving is only for focus group If you participate in the survey, you will receive a different gift). Refreshments will be provided for focus group participants. Compensation is given at the start of participation and will be given regardless if the participant decides to withdraw from the study.

Opportunity to Ask Questions:

You may ask any questions which may arise regarding any part of this research. These questions may be posed to the researcher or affiliated research associate before agreeing to participating or during the study. You may contact the investigator at the phone numbers below. All research with human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject, you may contact the committee, anonymously if you wish, at Duke Kunshan University Institutional Review Board or your local Institutional Review Board at Palau Community College.

Freedom to Withdraw:

Participation in this study is completely voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers, your teachers, the school which has provided the permission for the research to be conducted, Duke Kunshan University, or in any way receive a penalty or less of benefits you are entitled to otherwise. Withdrawing from the research will also not affect your grade in any way.

Consent, Right to Receive a Copy:

You are voluntarily deciding whether or not to participate in this research study. Your signature certifies that you agree to participate, having read and understood the information presented in this consent form. You may request a copy of this consent form to keep.

Name & Signature of Participant:

(Name of Participant: Please Print)

(Signature of Participant)

Date

Name and Phone Number of Investigator(s) and Other Contacts:

William Pu, Principal Investigator

Contact Number: 680 776 6335

Contact Email: William.Pu@duke.edu

Duke IRB

dku-irb@dukekunshan.edu.cn

The Prevention Unit

Contact Number: 680 488 8118/8119

Allan Burns, Research Supervisor

Contact Number: (+01) 352 870 1028

Contact Email: afb25@duke.edu

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