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Challenges of Smoking Cessation Research in Mongolia

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CHALLENGES OF SMOKING CESSATION RESEARCH IN MONGOLIA

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Table of Contents

Appendices

List of Tables

List of Figures

Abstract

CHALLENGES OF SMOKING CESSATION RESEARCH IN MONGOLIA

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The deleterious impact of tobacco use on health has been well-known for years. Nevertheless, cigarette smoking is a behavior which generally is not easily abandoned due to its addictive propensities. Thus, it is important for nurses to be competent in the delivery of evidence-based smoking cessation interventions which can help their clients achieve tobacco-free status. This need is particularly urgent in nations with high smoking prevalence rates, including many developing nations. The purpose of this study was two-fold. First, an investigation was undertaken to determine the smoking habits and influences among Eastern European nations, the former Soviet Union, and Mongolia. These nations shared the post-Soviet era experience of adjusting to economic and political changes while at the same time negotiating the advances of the transnational tobacco companies. Next, a smoking cessation intervention pilot study utilizing nursing students as the interventionists was conducted in Mongolia. This study utilized a single

group pre-and post-test design to evaluate changes in smoking cessation autonomous self-regulation (SCASR) and smoking frequency and intensity after a motivational coaching intervention. Post-counseling scores of SCASR and smoking frequency and intensity decreased, but none of these changes reached the level of significance. A high participant attrition rate created a smaller than desired sample for statistical analysis. Strengths and weaknesses of the intervention design were evaluated along with challenges of conducting health-related research in developing countries. Smoking cessation research studies are essential as nurses seek to learn and implement effective tobacco dependence treatment, particularly in vulnerable countries with limited resources.

Keywords: autonomous self-regulation, Mongolia, motivational interviewing, smoking cessation

Chapter 1: Overview of the Research Study

Overall Purpose of the Study

Disease is costly from many perspectives. In addition to the financial burden, poor health also claims a toll in terms of suffering, limiting roles and relationships, and decreasing productivity. Nurses have been key health care providers throughout the world addressing these hardships and striving to bring healing and comfort to those who are ill. Treating illness is a primary goal of nursing. However, preventing disease and its high cost are also nursing priorities which may significantly improve the quality of life of individuals, families, and communities. This would be particularly true for medically under-served and financially disadvantaged populations who are unable to access or afford expensive treatments for disease.

Extensive research has been undertaken demonstrating the harmful effects of smoking. Currently, tobacco use rates have begun to decrease in developed countries, helping to protect the health of these populations. Sadly, the tobacco use rate is increasing in the world's developing nations, afflicting those who can least afford the multiple costs of tobacco addiction (World Health Organization [WHO], 2013). One region of the world that has undergone relatively recent changes with respect to tobacco marketing comprises Eastern Europe, the former Soviet Union, and Mongolia. With the dissolution of the Soviet Union, transnational tobacco companies worked to gain entry into these previously restricted markets and communities (Rupert & Frankel, 1996; Sovinová and Czémy, 2000; T. Saruultuya, personal communication, 2011). Since increased tobacco use places

a populace at high risk for increased disease burdens, limiting use of tobacco in these populations is imperative.

The purpose of this study was to examine smoking habits, marketing, research, and cessation interventions in Eastern Europe, the former Soviet Union, and Mongolia. In addition to the presentation of a systematic review of the literature (SROL) which explored these issues, an original pilot study was undertaken testing a smoking cessation intervention among male university students in Mongolia. Due to the higher smoking prevalence among Mongolian males than females (Munkhjargal & Ariunzaya, 2012), young men were targeted with the goal of evaluating best practice strategies for preventing a lifetime of tobacco-related morbidity.

Introduction of Articles

Two manuscripts are presented to convey the findings of research undertaken in this study. The first, *Smoking Habits and Influences in Eastern Europe, the former Soviet Union, and Mongolia*, is a SROL investigating available articles covering smoking habits and influences in the above mentioned locations. While the nations studied in this research spanned a broad range of histories, cultures, and tobacco habits, they shared the challenge of navigating transition economies after the dissolution of the Soviet Union. This transition period was recognized by the transnational tobacco companies as an opportunity to capitalize on previously restricted markets, and they subsequently invested large sums of money into recruiting new generations of nicotine addicts in these regions (Gilmore & McKee, 2004).

Among these targeted nations, certain segments of the population had unique characteristics or faced specific barriers to maintaining or attaining a smoke-free lifestyle

(Pomerleau, Gilmore, McKee, Rose, & Haerpfer, 2004). Limited studies in English reporting effective smoking cessation interventions were available for clinicians interested in delivering evidence-based interventions to these populations. In spite of real and significant needs for research-based intervention studies, the finances and infrastructure required for their undertaking may present insurmountable obstacles for local economies. For example, Tajikistan and Uzbekistan, two nations from which no smoking research articles were located, had 2010 gross national per capita incomes of $780 United States dollars (USD) and $1,280 USD respectively (World Bank, n.d.). International collaboration in research is one strategy which may help overcome resource-related barriers.

The second manuscript, *Evaluation of a Motivational Coaching Intervention to Impact Smoking Habits of Male Mongolian University Students*, describes a smoking cessation intervention study targeting male Mongolian university students. This study was originally designed as a randomized control trial in which one group of smoking students would receive motivationally based smoking cessation counseling plus an anti-smoking teaching session, while a control group would receive only the anti-smoking teaching. Post intervention, three variables, smoking cessation autonomous self-regulation and smoking intensity and frequency, would be measured in each group to compare outcomes. Lower than anticipated study enrollment and participation led to study design revision as a pilot study to evaluate changes among these same variables in a single pre- and post-intervention group. Mongolian nursing students were trained and utilized in intervention delivery. After the counseling intervention, research assistants were interviewed to understand their perspective of the study activities.

Since tobacco smoking is a leading cause of death throughout the world, it is important for nurses to establish and deliver effective interventions to help clients achieve tobacco-free status. The research presented in these articles helps identify issues related to smoking habits in the targeted populations and the need for interventional studies in this region to establish best practices for smoking cessation interventions. Effectively mobilizing nurses to impact smoking prevalence rates among their clients would positively impact health outcomes of those for whom they care regardless of country of residence. The challenges of conducting interventional research studies in a low-income, developing country are also presented.

References

Gilmore, A. B., & McKee, M. (2004). Tobacco and transition: An overview of industry investments, impact and influence in the former Soviet Union. *Tobacco Control, 13*(2), 136-142.

Munkhjargal, C., & Ariunzaya, B. (2012). Rusuls (sic) of survey prevalence of chronic (sic) and prevalence and number smokers Ulaanbaatar and Altai City, Gobi-Altai. Proceedings from *The 1st International Conference "Nursing Education".* Govi-Altai, Mongolia: Govi-Altai Branch School of the Health Sciences University of Mongolia.

Pomerleau, J., Gilmore, A., McKee, M., Rose R., & Haerpfer, C. W. (2004). Determinants of smoking in eight countries of the former Soviet Union: Results from the Living Conditions, Lifestyles and Health Study. *Addiction, 99,* 1577–1585. doi:10.1111/j.1360-0443.2004.00885.x

Rupert, J., & Frankel, G. (1996, November 19). In ex-Soviet markets, U.S. brands took on role of capitalist liberator. Washington Post. Retrieved from http://www.washingtonpost.com/wp-srv/national/longterm/tobacco/stories/global3.htm

Sovinová, H., & Czémy, L. (2000). Marketing, use, and health effects of tobacco in Eastern Europe. *Journal of Substance Abuse, 5,* 185-189.

World Bank. (n.d.). Gross national income per capita 2010, Atlas method and PPP. Retrieved from http://siteresources.worldbank.org/DATASTATISTICS/Resources/GNIPC.pdf.

World Health Organization. (2013). Tobacco free initiative (TFI). Tobacco facts. Retrieved from http://who.int/tobacco/mpower/tobacco_facts/en/

Chapter 2. Smoking Habits and Influences in Eastern Europe, the former Soviet Union, and Mongolia

Abstract

Purpose: The purpose of this literature review was to evaluate current knowledge related to cigarette smoking and the smoking environment in Eastern Europe, former Soviet Union, and Mongolia. Method: An electronic search was conducted on CINAHL and Medline. Results: High smoking prevalence rates were noted among men in this region, while prevalence rates among women varied by country. Age, education, socioeconomic status, and beliefs also impacted smoking rates. Transnational tobacco companies have heavily invested in this region to promote smoking. Tobacco control policies face challenges in implementation and public support. Limited smoking cessation intervention studies have been published in English for this region. Conclusion: Populations in Eastern Europe, the former Soviet Union, and Mongolia are at high risk for tobacco related mortality and morbidity. Priorities include the promotion and implementation of tobacco-free environments and the development of evidence based smoking prevention and cessation programs.

Keywords: cigarette smoking, smoking cessation, tobacco industry

The World Health Organization (WHO) estimated that the annual global tobacco use mortality rate is 5.4 million lives and that tobacco use "is a risk factor in six of the eight leading causes of deaths in the world" (2013). WHO further warned that while developed countries were experiencing a decline in tobacco use, it was actually increasing in the developing world. It was projected that if current trends were not reversed, by 2030, 80% of the projected tobacco related deaths would occur in developing countries. This makes tobacco prevention, cessation, and policy control issues important global health care priorities.

In recent years there has been a shift in tobacco use trends throughout the world. Currently, high rates of cigarette smoking are documented in populations which had previously been influenced by Soviet economics and policies, including the Warsaw Pact nations of Eastern Europe (EE), the former Soviet Union (FSU), and Mongolia (WHO, 2012). Although some of these nations exhibit great diversity in culture, they faced similar challenges of addressing tobacco control issues during transition from Soviet-influenced economies. While state control of tobacco products was the norm during the Soviet era, the rapid dissolution of the Soviet Union provided little time for establishing effective tobacco control policies in new, potentially free market economies. This situation did not go unnoticed by the transnational tobacco companies, which took this opportunity to gain product entry into these regions (Rupert & Frankel, 1996; Sovinová & Czémy, 2000; T. Saruultuya, personal communication, 2011). Currently, some of these nations are experiencing high rates of cigarette use, which in turn are expected to increase mortality and morbidity rates among these populations.

Research has demonstrated decreased mortality and morbidity cancer rates among those who avoid or cease tobacco use compared to smokers (National Cancer Institute, 2010). In a comparison of smokers to ex-smokers, Magnus et al. (2011) calculated that an 8% decrease in the smoking prevalence among the 2008 Australian population would prevent 5,000 deaths and 158,000 cases of disease annually, while saving 491 million Australian dollars in health care costs for the lifetime of this 2008 cohort. This shows the value of successful smoking cessation programs. Research demonstrating successful smoking cessation strategies can help identify best practice interventions useful in program development and implementation. The clinical practice guideline for tobacco use encourages the implementation of culturally appropriate and sensitive smoking cessation interventions (Fiore et al., 2008). In view of these priorities, this systematic review of the literature (SROL) will target the Eastern European Warsaw Pact nations of the 1980s (with the exception of Germany), the FSU, and Mongolia in order to investigate recent tobacco habits and influences in these regions.

Electronic Search Methods

During this SROL, electronic searches were conducted separately on CINAHL and Medline. Nine individual searches were performed on both databases. For each search, one of three locations (Eastern Europe, Former Soviet Union, or Mongolia) was combined with one other key term, either *smoking*, *smoking cessation*, or *tobacco marketing*. Due to the historical fluctuations, dates were limited to the years 1990-2012. Inclusion criteria specified articles needed to be written in English and report original research findings. Research presenting data in which information from targeted locations/dates was combined with other locations/dates and could not be uniquely

identified was excluded. Thus, data combining information from both Eastern and Western European nations were not included, but data listed as Eastern European were accepted. Since the focus of this SROL was to examine issues specific to the identified populations, articles were excluded if they focused on the relationship between smoking and a disease, such as cancer. Finally, articles discussing immigrants and articles focusing on the Democratic Republic of Germany (reunified with the Federal Republic of Germany) or Albania (not a Warsaw Pact member in the 1980s) were also excluded. From this search, CINAHL and Medline produced 17 and 23 articles respectively. Three of these articles have not yet been obtained for review. A total of 18 of the 22 targeted nations were discussed in the selected articles. The countries lacking representation were Azerbaijan, Tajikistan, Turkmenistan, and Uzbekistan. Some articles discussed groups of nations while others discussed a single nation. In this paper, the 37 reviewed articles will be discussed in three sections: smoking habits and influences (23), tobacco marketing and control (10), and cessation intervention studies (4). This SROL will then conclude with an analysis of the findings.

Smoking Habits and Influences

In this SROL, 23 articles presented information in some way describing cigarette smoking prevalence, trends, determinants, and/or correlates. To review findings in the selected articles, four categories have been constructed: age and gender prevalence rates and trends, social groups and relationships, education and socioeconomic status (SES), and mental health and beliefs. As some articles discussed more than one of these factors, the information presented in each of these sections draws from all relevant articles as opposed to segregating the articles into unique sections.

Age and Gender Prevalence Rates and Trends

Information related to smoking age and gender prevalence trends was discussed in 16 articles and included data from 14 different nations (EE [4], FSU [9], and Mongolia). In articles discussing smoking prevalence among teens, data revealed increased smoking rates with maturing age (Centers for Disease Control and Prevention [CDC], 1997; Rudatsikira, Dondog, Siziya, & Muula, 2008). In a study involving Hungarian university students, the majority of whom were female, 21% had begun smoking under age 15, while 44% had begun by age 18 (Nagy, Barabás, & Nyári, 2004). Among the medical and dental students in this study, over 50% started during their university years. In a study from Belarus, 50% of the currently smoking 18-29 year olds reported smoking initiation younger than age 16 (Gilmore, McKee, & Rose, 2001). However, only 22% of those between the ages 30-39 had started smoking that early. The same study also reported that, with the exception of the 18-29 age group, the most frequent age of initiation for current smokers was between 16-20 years. In a composite of smokers from all age groups, only 13% began smoking after age 20. Thus, while a significant portion of smokers began using tobacco under age 20, the mean age of smoking initiation may vary by nation.

Age of initiation may be impacted by gender in some nations as well. Among eight FSU nations, the most common male age of initiation was between 16-20 years (Gilmore et al., 2004). For males in Belarus, Russia, and Ukraine, over 30% began under age 16, while in Georgia and Kyrgyzstan less than 20% began this early. The least common age for male initiation was over 20. In contrast, the most common female smoking initiation age was between ages 16-20 in Belarus, Kazakhstan, Russia and

Ukraine and was after age 20 in Armenia, Georgia, and Moldova. For women, Belarus and Moldavia had the highest prevalence of those starting below age16, (20% and 22.9% respectively), while in Kyrgyzstan only 12.5% of the women started this early. These articles suggest different smoking initiation patterns among different genders and nations.

Beyond the adolescent years, there were cohort-related trends in different nations as well. In prevalence data from eight FSU nations, with the exception of Moldova, the highest prevalence of smoking was for men 30-39 (Gilmore et al., 2004). Based on the date of the survey, these men would be approximately age 16-20 (common smoking initiation age) between the years 1978-1991. In an Estonian study, the highest prevalence for men and women was ages 25-34 (Meren et al, 2001). This cohort would have been age 16-20 around the years 1977-1990. In a Polish study, males born between 1946-1956 had their highest smoking prevalence at age 30, (1976-1986), while men born between 1957-1966 had the highest prevalence in their 20s (1977-1986) (Romundstad et al., 2011). For women born 1946-1961 the highest prevalence was at age 30 (1976-1991). Women born 1962-1964 maintained a high prevalence at age 20 and 30 (1982-1994), after which the rate declined. As will be noted later in this paper, in the USSR, the peak cigarette production years were the early 1970s to the mid-1980s (Gilmore & McKee, 2005). However, whether high smoking prevalence years were related to supply and access issues or to stages in life has not been determined.

In several studies, the age with the lowest smoking prevalence was the oldest group (Gilmore et al., 2001; Meren et al., 2001; Romundstad et al., 2011). Among eight FSU nations, with only two exceptions among the females, the male and female age with the lowest prevalence was 60 and over (Gilmore et al., 2004). Gilmore speculated this

may reflect an increased mortality among smokers at this age. However, they also discussed the theory that this may represent a cohort effect, as both never-smoked prevalence rates were higher (McKee et al., 1998) and lung cancer rates were lower in this generation which experienced its late adolescent years during a post-World War II era of low tobacco availability in the USSR (Shkolnikov, McKee, Leon, & Chenet, 1999).

Gender was also a factor affecting smoking prevalence in the FSU, although for some nations this made a greater impact than for others. Among 2001 data from eight FSU nations, the male smoking rate was between 50-60%, with the exception of Moldova (43.3%) (Gilmore et al., 2004). In contrast, for three nations (Armenia, Kyrgyzstan, and Moldova), the prevalence of female smoking was below 5%, and for two (Georgia and Kazakhstan) it was between 5.1-10%. For the remaining three nations it was less than 16%, with Russia's being the highest at 15.5%. This demonstrated a significant gender gap between male and female smoking rates in some nations.

In conjunction with the Gilmore et al. (2004) study showing male and female smoking rates from Georgia noted above, evaluation of two other studies reporting smoking prevalence rates from this nation revealed the importance of sample selection and reporting when considering smoking prevalence rates across cultures. In the Grim et al. (1999) study from Georgia, the male and female smoking prevalence rates were 60% and 15% respectively. The Georgian sample from the Grim et al. (1999) study was exclusively from the capital city. On the other hand, 43% of the Gilmore et al. (2004) Georgian sample (female smoking rate of 6.3%) was from the rural area. The difference in reported female smoking rates between these two studies may be related to the finding

that among women from eight FSU nations, including Georgia, rural women were less likely to be smokers than those in urban areas (Pomerleau, Gilmore, McKee, Rose, & Haerpfer, 2004). In another study on physicians and nurses from the Georgian capital, the smoking prevalence rate was 32% (Wold, Williams, & Kobaladze, 1999). However, this sample was 80% female. Thus, all these differences in smoking prevalence rates for one nation could be explained by demographic factors in the FSU population.

Gender smoking trends, however, were different in Eastern Europe. While one early study reported low smoking rates among both men and women in Hungary (15.4% and 15.1% respectively) (Steptoe & Wardle, 1992), a later study revealed a marked increase in Hungarian smoking prevalence with males at 35.7% and females at 34.8% (CDC, 1997). In spite of the large rate increase, the difference between male and female prevalence rates remained minimal. Another study reporting composite data of teens from four EE nations (Czech Republic, Hungary, Romania and Slovakia) also reported no significant difference in rates between males and females (31.2% and 35.2% respectively) (Page, Ihasz, Simonek, Klarova, & Hantiu, 2006). Boback et al. (1999) reported the Czech Republic smoking prevalence of males ages 45-64 at 34%. As this was an all-male sample, no female prevalence was noted. Additional data from the Czech Republic showed a difference in prevalence rates between males (40%) and females (23%) ages 25-64 (Boback, Skodova, Pisa, Poledne, & Marmot, 1997). Finally, a study reporting Polish teens smoking rates for males (15.3%) and females (32.5%) demonstrated a higher rate among the females (Page et al., 2008). These articles help demonstrate the variability of smoking prevalence rates among different nations.

Social Groups and Relationships

There were five articles that discussed social groups and relationships for 13 nations (EE [4], FSU [8], and Mongolia). Marital status was a factor in many nations. In Belarus, single men had a decreased chance of smoking, while those experiencing a family situation with conflict had an increased chance (Gilmore et al., 2001). Another study including composite data from four FSU nations, including Belarus, reported that married women were less likely to smoke than those who were unmarried (Cockerham, Hinotea, & Abbott, 2006). Across eight FSU nations, some lack of social support was associated with an increased chance of smoking in men but not women (Pomerleau et al., 2004). These findings reveal an association between personal relationships and smoking status.

Not surprisingly, associations were noted between teen smoking prevalence and a teen's smoking friends. Teens with smoking friends had increased odds of being smokers (CDC, 1997; Rudatsikira et al., 2008). Among teens in four Eastern European nations, smoking prevalence was highest among those reporting that all their friends smoked, those who estimated the male or female smoking prevalence rate to be at least 75%, those who easily made new friends, and those who spent time with their friends immediately after school four or five days per week (Page et al., 2006). In contrast, those with the lowest prevalence had no friends that smoked, thought the male or female smoking prevalence rate was less than 25%, thought making new friends was difficult, and did not spend time with friends immediately after school on a regular basis. In this same study, male and female teens were asked to estimate the percent of peer current smokers (smoked within the past 30 days). While the actual rate of male and female smokers was

31.2% and 35.2% respectively, the majority of male and female students estimated prevalence rates of 50% or more for their peers. The authors pointed out that this incorrect view of normative behavior may influence smoking among students.

Education and Socioeconomic Status

In this review, there were 10 articles that discussed the relationship between smoking and education and/or SES in 14 countries (EE [2], FSU [11], and Mongolia). Data from the Czech Republic showed prevalence rates among males and females (M/F%) with primary (46/30%), secondary (38/19%), and university level (21/11%) education (Boback et al., 1997). With the exception of smoking among females with primary education, there was a decline in these prevalence rates from similar data collected in 1985. Data from four FSU nations also demonstrated lower odds of smoking among men with secondary vocational or higher education compared to those with secondary education, but education level did not have a significant impact on female smoking (Cockerham et al., 2006).) Data from eight FSU nations (Pomerleau et al., 2004) and Poland (Szaflarski, 2001) also demonstrated lower smoking prevalence in men with increased levels of education but did not detect any significant difference in smoking prevalence related to female education status. So while higher education may be protective for men, it has not consistently demonstrated that same impact for women in these regions.

One possible explanation for the lack of benefit from higher education for these women could be the location of higher level institutions. Often, universities are located in urban areas as opposed to village settings. Among eight countries of the FSU, female smoking prevalence increased in women living in urban settings, with those in the capital

having the highest prevalence (13.3%) compared to those living in a village (3.9%) (Pomerleau et al., 2004). For men, there was no significant difference in smoking rates between urban and rural dwellers. Similar findings were reported in a study from Belarus that also looked at male and female smoking rates in urban and rural locations (Gilmore et al., 2001). Thus, if women were relocating from the village to the city as they pursued higher education, this environmental change may have put them in a more tobacco-friendly environment.

Employment status, as well, has been associated with smoking prevalence in this region. Among four FSU nations, for men there was less chance of smoking among top managers, professionals/managers, and clerks without higher education than for unskilled workers (Cockerham et al., 2006). In this same study, female skilled workers and top managers had a greater chance of smoking than females who performed unskilled work. However, among Belarus females it was the skilled agricultural or unskilled workers who had the greater chance of smoking when compared to workers who were more skilled (Gilmore et al., 2001). Unemployment was associated with increased smoking in the Czech Republic (Dragano et al., 2007) and among men and urban women in Belarus (Gilmore et al., 2001). So, while unemployment was associated with higher smoking rates, gender and job roles also could be factors.

General SES impacted smoking status as well. In eight FSU nations, the odds of smoking were lowest for males with good family economic situations and females with average family economic situations (Pomerleau et al., 2004). In Ulaanbaatar, Mongolia, the poorer city dwellers live in traditional tents called gers, while those with more economic success live in more urbanized dwellings, such as apartments. A study

comparing health measures between ger-dwellers and those dwelling in more urbanized settings revealed that over half the male ger-dwellers smoked, compared to 25% of males in the urbanized settings (Komatsu et al., 2004). Living in an over-crowded environment was associated with increased smoking in the Czech Republic (Dragano et al., 2007). All these studies help demonstrate the impact SES can have on smoking prevalence.

Two more studies focusing on SES realities among the younger population were also included in this review. One study examined the health of Roma children in Latvia and Lithuania compared to a control group of children (Kanapeckienė, Valintėlienė, Beržanskytė, Kėvalas, & Supranowicz, 2009). The SES and health of the minority Roma population were generally considered below average. While the smoking prevalence was higher in the Roma children compared to a control group, the difference was not significant. It should be noted, however, that the mean age of the groups differed, with the control group being the oldest group. As was previously discussed, older adolescents generally have higher smoking rates, so the control group's older mean age may possibly be a factor in the statistical non-significant difference between the groups. Finally, a study on smoking prevalence among Mongolian teens reported that those with the equivalent of at least $10 USD in pocket cash were six times more likely to smoke than those without pocket cash (Rudatsikira et al., 2008). Clearly, economic realities can impact smoking habits.

Mental Health and Beliefs

Nine of the articles, covering 15 different nations (FSU [8], EE [6], and Mongolia), discussed mental health and beliefs as related to smoking prevalence. One study compared levels of hopelessness and loneliness among male and female teen

smokers between Southeast Asian nations with five EE nations and the Ukraine (Page et al., 2008). Smoking experience correlated with hopelessness among EE females (with the exception of Ukraine) and Southeast Asian males and females. While Southeast Asian female teen smoking was associated with high scores in loneliness, the opposite was noted for Central Eastern European females, among whom the smokers had low scores for loneliness. In Belarus, when asked to identify reasons for smoking, a notable number of male and female smokers (33% and 47% respectively) stated that it helped calm nerves (Gilmore et al., 2001). Cockerham et al. (2006) reported that for men, psychological distress was associated with frequent drinking, but not smoking, while for women psychological distress was associated with higher chances of smoking but not drinking. Thus, gender differences were noted in this area of life as well.

Beliefs were related to smoking prevalence in a variety of ways. Religious affiliation was noted to have a protective effect in two studies. One of these was in Poland, where there is a high Roman Catholic population (Szaflarski, 2001). The other one was among the Muslim population in eight FSU nations (Pomerleau et al., 2004). Health beliefs in general also were reported in relation to smoking status. In Belarus, while smoking was identified as bad for health by many smokers (48%) and nonsmokers (87%), there were still smokers (25%) and nonsmokers (3%) who reported thinking that it was positive for health or relaxation. Passive smoke was identified as bad by 72% of smokers and 91% of nonsmokers (Gilmore et al., 2001). Among Mongolian male and female teens, who had smoking prevalence rates of 15.4% and 4.4% respectively, a high percentage of males (84.4%) and females (89%) agreed with the statement that smoking was definitely harmful (Rudatsikira et al., 2008). According to the same study, females

who reported believing smoking was probably not or definitely not harmful were six times more likely to smoke than females believing that it was definitely harmful. This data suggests alignment between personal beliefs and behavior with respect to smoking.

The relationship between beliefs and behavior was also evaluated by Steptoe and Wardle (1992), who reported findings from an eight nation European study of university students, including some from Hungary and Poland. Here, both Hungarian men and women highly rated a belief in the importance of not smoking for health. Correspondingly, the Hungarian prevalence rates for smoking were 15.4% for men and 15.1% for women. According to the same study, between Polish men and women, it was the women who more highly rated a belief in the importance of not smoking for health. Polish male and female smoking prevalence rates were 34.7% and 22.1% respectively. Among the countries which were studied, there was a correlation between the proportion of nonsmokers and their nation's mean rating for importance of not smoking for health.

Interestingly, in this same study (Steptoe & Wardle, 1992), there was a positive relationship between risk awareness and smoking behavior. In Poland, and in the overall study as well, men were more aware of smoking health risks than women were, but also, the smoking prevalence rate was higher among men. However, belief in the importance of not smoking for health was a stronger predictor of smoking behavior than was risk awareness. While risk awareness of smoking dangers may be useful, the results of this study suggest a more comprehensive intervention including personal beliefs about the importance of not smoking for health also should be addressed.

In a 21-nation study that included five Eastern European nations, there was a positive correlation between life satisfaction and not smoking (Grant, Wardle, & Steptoe, 2009). There was also a strong connection between health beliefs and health behaviors. Interestingly, the authors noted that health beliefs were not a mediating link between health behavior and life satisfaction, suggesting that the behavior had a motive other than staying healthy. So once again, health beliefs were associated with actual smoking habits.

Tobacco Marketing and Control

Eleven articles were included in this section related to tobacco marketing and control. Five articles discussed actions taken by transnational tobacco companies (TTC) to acquire access and profits from nations from which previously they had been largely excluded while the region was under Soviet control. The remaining six articles discussed issues related to tobacco control policies, such as the prevalence and effectiveness of smoking bans or the cost of cigarettes. The information in these articles detailed the challenges faced by nations in establishing and maintaining healthy environments.

Three of the articles focusing on TTC activity reviewed British American Tobacco (BAT) documents to discover company motives and strategies for entry and profitability into the FSU and/or EE markets (Gilmore & McKee, 2004a; Gilmore & McKee, 2004b; LeGresley, Muggli, & Hurt, 2006). The focus of these articles was examining written company statements discussing priorities and methods of increasing business profits in this new potential market. BAT activities, as well as the activities of other TTCs, were not limited to mere speculation and planning, however. The TTCs demonstrated serious commitment to acquiring market share in these new populations.

By 2000, 10 FSU nations had received investments of over 2.7 billion USD from the TTCs (Gilmore & McKee, 2004c).

Further, Gilmore and McKee's (2004c) calculations of the TTC's percent of overall foreign direct investment revealed a range from 1% (Azerbaijan and Latvia) to more than 30% (Uzbekistan). Gilmore and McKee (2005) also compared pre- and post-transition cigarette production and consumption in countries not receiving TTC direct investment (Belarus, Georgia, Moldova, Tajikistan, and Turkmenistan) with those receiving a significant amount of TTC direct investment (Estonia, Kazakhstan, Latvia, Lithuania, Russian, Ukraine, and Uzbekistan) prior to 1997. Cigarette production in the USSR increased from the 1960s and peaked between the early 1970s to mid-1980. After this, a decline in production started, which eventually leveled off in the early 1990s. Since then, production has increased. When comparing 2000 data to that of 1991, cigarette production increased 96% in nations receiving TTC direct investment, but only 11% in those not receiving TTC direct investment. Per capita cigarette consumption for people age 15 and over decreased by 3% in nations without TTC direct investment, but increased 51% in nations receiving direct investment. With regard to long-term health outcomes, TTC direct investment will have a disastrous impact on these populations.

In the midst of these events, nations struggled to enact tobacco control legislation. As in many countries, this is an ongoing challenge. Cost effective strategies for tobacco control were evaluated for Estonia (Lai, Habicht, Reinap, Chisholm, & Baltussen, 2007). The most effective strategies were considered to be increasing cigarette taxation, instituting a comprehensive advertising ban, mandating indoor smoking prohibitions, and using nicotine replacement therapy as a cessation therapy.

Brief smoking cessation advice from health care providers was also considered cost effective. In a study by Kan (2007), the price of cigarettes in 60 nations worldwide, including six EE nations plus Russia and Ukraine, was evaluated. This study evaluated local cigarette affordability by calculating the price of a pack of cigarettes related to daily income. Bratislava, Slovakia, and Moscow, Russia were ranked among the cities having the highest affordability. Kiev, Ukraine was the only city in the nations included in this literature review with low affordability. The researchers suggested that there was significant room for increasing taxes on cigarettes in most locations.

Attitudes and policies regarding smoke-free areas varied by location. A study assessing the smoking environment of bars and nightclubs in 25 cities throughout the world included four FSU nations (Armenia, Kyrgyzstan, Russia and Ukraine), Poland, and Mongolia (Shahrir et al., 2011). Ten establishments were evaluated in each of these six nations, with the exception of only six in Ukraine. Among the evaluated bars and nightclubs in these six nations, only 20% in Poland and 10% in Russia were smoke free. In Poland, only 60% of the establishments sold cigarettes, while in the other five nations 90-100% of the establishments sold them. The amount of tobacco advertising varied by nation, but was present in each of these nations' bars and nightclubs to some degree. Also, in a study by Rudatsikira, Siziya, Dondog and Muula (2007), over 70% of Mongolian male and female teens reported exposure to environmental tobacco smoke, with most of this exposure being at home. These articles exposed the challenges faced by nonsmokers with respect to breathing smoke-free air.

Support of smoke-free environments also differed by location. A study including Bulgaria and Romania evaluated support for indoor smoking bans in different locations

across multiple European nations (Muilenburg, Legge, & Burdell, 2010). In Bulgaria and Romania, support for smoking bans was lowest for restaurants and bars, with more support reported for indoor work and indoor public places. Bulgarian support for these indoor work and public places bans was over 80%, while Romanian support was close to 70%. Another study from Mongolia surveyed the attitudes of restaurant owners and managers in the capital city (Chang et al., 2009). While Mongolian law stipulated regulations designating smoking and nonsmoking areas, only 16.2% of the owners or managers reported knowing the specifics of the law. Over 90% of the owners/managers were aware that second hand smoke (SHS) was harmful to children. Nevertheless, 39.3% believed it was permissible for someone to smoke in the presence of nonsmokers in public places. Cigarettes were sold by 58.7% of the restaurants. While 29.3% of the restaurants maintained a smoke-free environment, the remainder of the restaurants offered no effective separation between smokers and nonsmokers. About 90% had received no complaints about SHS in the past six months. If nonsmokers become more vocal about dislike for SHS, this may promote compliance with legislated smoke free areas.

Cessation and Intervention Studies

Remarkably and regrettably, only four articles discussing interventional activities were located. Pardell et al. (2001) reported results from a multi-nation study including Hungary, Poland and Russia. This actually was a descriptive study evaluating the frequency of anti-smoking counsel given by health care providers to smokers in the general population (GP) or smokers having a chronic disease (CD). When comparing these three EE nations to those surveyed in Western Europe, the clients in the Eastern

European GP group were given more anti-smoking counsel than those in the Western European GP groups. This was true for the Eastern and Western European CD groups as well. In Hungary and Poland, the increase in the counseling rate for smokers was more than double that for nonsmokers. These two countries also provided the highest percents of counseling to GP and CD groups among all nations surveyed.

In an interventional study, television programs offering health promotion teaching on selected topics, including smoking cessation, were developed and piloted in three EE nations and Russia (Chew & Palmer, 2005). For smoking cessation programs, post-viewing intent to change was reported for the Czech Republic (5.3%), Hungary (26%), Poland (9.3%), and Russia (13.6%). In the article, actual behavior change reported during follow-up did not specify which of several discussed behaviors were actually changed, so it was not possible to determine the effectiveness of the smoking cessation programs.

The final two studies reviewed were also interventional in design. One study was an uncontrolled trial for cytosine, an Eastern Europe medication used as a smoking cessation aide for decades, but lacking rigorous studies demonstrating effectiveness required for international acceptance (Zatonski, Cedzynska, Tutka, & West, 2006). In this sample, 13.8% of the Polish participants were abstinent after one year. Lastly, a smoking cessation intervention providing five days of small group counseling was undertaken in Mongolia (Baigalmaa, Nishimura, & Ito, 2006). At 12 month follow-up, 65% of participants reported not smoking. Follow-up was completed via phone, so no physical verification (i.e., cotinine testing) was obtained. This short review highlights the need for more culturally sensitive interventional studies to establish best practice strategies in these populations.

Analysis

Several important ideas can be obtained from the review of these articles. One obvious issue is that internationally accessible data concerning smoking issues among the former Soviet-bloc nations are minimal. Obviously, one limitation of this review is that it only included research published in English. It is certainly possible that other work has been published in some other languages. Even if this is the case, information access is still limited for the broader international community.

As noted previously, four of the targeted nations were missing entirely from the studies for this review. Two of these nations, Tajikistan and Uzbekistan, had 2010 gross national per capita incomes of $780 United States dollars (USD) and $1,280 USD respectively (World Bank, n.d.). Given the economic hardship many of the targeted nations have encountered the past couple of decades, the health care systems of this region may have limited financial capacity to fund extensive smoking cessation research. As of 2013, the price for 15 NicAlert™ cotinine test strips was listed as $225.00 USD (Craig Medical Distribution Inc., 2012). This may render confirmation of post-intervention smoking cessation unfeasible for research investigating cessation intervention efficacy in some developing nations.

Indeed, nursing research in developing countries faces numerous obstacles, many of which are associated with economics in some way. One challenge for potential nurse researchers is obtaining appropriate and sufficient education and skills in the research process. They also may have limited access to tools for research activities, including access to electronic full-text databases for literature reviews and software for statistical analysis. Use of these tools, as well as collaboration with international nurse research

experts, would be facilitated by bilingual abilities. In nations with limited finances for investment into nursing education and research, however, these issues may create huge challenges. It is encouraging to note that in 2012 a Mongolian nurse earned a Ph.D. for the first time in the history of Mongolia. This milestone can pave the way for future nursing research endeavors in that nation.

One option for overcoming some of the challenges faced by nurse researchers in developing nations is through international cooperation. More developed nations may help provide funding and research experience, while national health care experts can assist with accessing more remote population samples and facilitate development of effective data collection instruments in the national language. Lucas (2005) recommended that research activities provide real benefit to all collaborating parties, with each party contributing to the research process based on areas of expertise and resources. Lucas also stressed that it was important for developing nations to conduct control trials as opposed to assuming that research conducted on a different population and culture could be applied with equivalent results in a vastly different setting. Recognizing the unequal global distribution of nursing research resources, Schultz (2004) encouraged nursing leaders in developed countries to become research resources for the improvement of global health.

From the articles reviewed, several ideas for interventions were discussed. Strong, effective tobacco control legislation is needed, and steps need to be in place to insure that it is being implemented (Chang et al., 2011; Gilmore et al., 2004). One option is pricing tobacco products high enough to actually limit purchases among the population (Kan, 2007). Particularly with teens, information about the true prevalence of smokers should

be discussed, as teens may view the addiction as more normative than it really is (Page et al., 2006). Germain, Wakefield and Durkin (2007) reported that even in Australia, which has fairly comprehensive public places smoking restrictions, only 5.5% of nonsmokers would ask someone lighting up in their vicinity to refrain from smoking. Interventions in tobacco prevention education that encourages nonsmokers to be proactive and speak in defense of smoking bans or other tobacco control policies may be useful. Patronage of smoke free establishments should be encouraged as well. Owners/managers may be more likely to operate smoke-free establishments if they see it as a strategy for attracting valuable costumers.

The willingness of TTCs to invest literally billions of dollars into this region (Gilmore & McKee, 2004c) demonstrates their determination to addict new generations and populations to help insure the companies' financial welfare for decades to come. These activities demonstrate a conviction that the availability of tobacco products and visibility of tobacco advertising can promote smoking in a cohort of people. Historical data previously discussed in this review suggested that cohorts which had either limited or abundant access to tobacco may have prevalence rates differing from cohorts in the same nation that came before or after this era (McKee et al., 1998; Shkolnikov et al., 1999). This indicates a non-static pattern in cigarette smoking within a culture/nation. This possibility highlights the importance of effective and aggressive tobacco control policies as a means of curbing future tobacco related mortality and morbidity.

Several of the articles in this review discussed the impact of lower educational and socioeconomic status on smoking prevalence. Among men, there were consistent

trends showing increased smoking prevalence with lower education and SES (Cockerham et al., 2006; Pomerleau et al., 2004; Szaflarski, 2001). Thus, those with less financial means to access and afford state of the art health care for smoking related morbidities are at higher risk for these specific health problems. For this reason, delivering effective health promotion and disease prevention interventions among this population is crucial.

Among females, the relationship is a bit more complex, perhaps because of confounding issues such as the commonly urban location of universities and the prospect that more highly educated women may acquire jobs in which female smoking is common or expected (Cockerham et al., 2006). Further, it is noted that female smoking patterns differ from that of males in certain ways, including age of initiation (Gilmore et al., 2004). In cultures where significant differences in patterns of male and female smoking have been noted, it may be useful to evaluate gender specific prevention and cessation interventions.

One intriguing issue is the interaction of health behavior beliefs, risk awareness, and smoking prevalence. Steptoe and Wardle's 1992 research among university students showed that compared to smokers, non-smokers gave a higher rating to the importance of not smoking for health. However, risk awareness of smoking-related health problems was not protective against the habit. In a ten year follow-up study (Steptoe, Wardle, Cui, Bellisle, et al., 2002) of university students in 13 European nations, smoking prevalence rates were higher on the follow-up study in most countries, with statistically significant increases in Hungarian males and females as well as Polish females. At the same time, significantly decreased ratings in the belief of the importance of not smoking for health were seen in Hungary and Poland. While risk awareness of health-related smoking

problems increased in some nations (including Poland), it decreased in others. Across the nations surveyed, there was no correlation between changes in health behavior prevalence and changes in risk awareness. It was recognized that the unique population of university students was not generalizable to the overall population, as university students are better educated and, in general, less likely to be smokers.

In another article involving university students from 23 nations, including North and South America, Asia, Europe, and Africa, a similar trend was noted (Steptoe, Wardle, Cui, Babon, et al., 2002). With the exception of one nation (Japan), there were increased odds of smoking for those with low ratings for the belief in the importance of not smoking for health. Risk awareness levels were less predictable of smoking behavior, but knowledge about heart disease smoking risks was not protective against smoking in any nation. Finally, similar findings were also noted in a study among Swedish blue collar workers, which noted that belief in the importance of healthy behavior was associated with behavior performance, but risk awareness was not associated with adoption of healthy behaviors (Näslund, 1997).

Health care providers should take this information regarding smoking risk awareness, health beliefs, and smoking habits into account when planning and delivering care and counsel. While this information does not prove that risk awareness is not important knowledge in some respect, it does suggest that risk awareness alone does not stimulate or maintain nonsmoking behaviors across multiple cultures. Thus, while delivering quick counsel on a list of health problems related to smoking may cost little, it may also have little impact in changing behavior, which would be an important measure of effectiveness. Strategies must be developed and utilized which can increase belief in

the importance of nonsmoking behavior, an outcome which has consistently been tied to client behavior.

Conclusion

Former Soviet-bloc nations, including EE, the FSU, and Mongolia, all encountered significant political, social, financial, and health care challenges following the dissolution of the Soviet Union. In the midst of this environment, TTCs were willing to aggressively invest billions of dollars into increasing the number of tobacco users among these largely untapped international markets. In many of these populations, an increase in tobacco use has followed. Higher use of tobacco was seen also in the underprivileged segment of the population. Nevertheless, there is still minimal internationally disseminated information about effective, culturally-sensitive tobacco prevention and cessation interventions designed for these populations. The development of evidence based smoking prevention/cessation interventions depends on researchers to advance this knowledge through new and ongoing research. While the challenges for these activities are vast, the impact on client health outcomes for the next generation will be vast as well.

References

Baigalmaa, D., Nishimura, A., & Ito, K. (2006). Smoking cessation rate 12 months after a group counseling program in Mongolia. *Asian Pacific Journal of Cancer Prevention, 7*, 399-402.

Boback, M., Hense, H-W., Kark, J., Kuch, B., Vojtisek, P., Sinnreich, R., … Marmot, M. (1999). An ecological study of determinants of coronary heart disease rates: A comparison of Czech, Bavarian and Israeli men. *International Journal of Epidemiology, 28,* 434-444.

Boback, M., Skodova, Z., Pisa, Z., Poledne, R., & Marmot, M. (1997). Political changes and trends in cardiovascular risk factors in the Czech Republic, 1985-92. *Journal of Epidemiology and Community Health, 51*, 272-277.

Centers for Disease Control and Prevention. (1997). Prevalence of cigarette smoking among secondary school students- Budapest, Hungary, 1995. *Morbidity and Mortality Weekly Report, 46*(3), 56-59.

Chang, S-H., Delgermaa, V., Mungan-Ulzii, K., Erdenekhuu, N., Odkhuu, E., & Huang, S-L. (2009). Support for smoke-free policy among restaurant owners and managers in Ulaanbaatar, Mongolia. *Tobacco Control, 18,* 479-484. doi: 10.1136/tc.2009.030486

Chew, F., & Palmer, S. (2005). Television health promotion in four countries. *Nutrition, 21*, 634-638. doi:10.1016/j.nut.2004.09.022

Cockerham, W. C., Hinotea, B. P., & Abbott, P. (2006). Psychological distress, gender, and health lifestyles in Belarus, Kazakhstan, Russia, and Ukraine. *Social Science & Medicine, 63*, 2381–2394. doi:10.1016/j.socscimed.2006.06.001

Craig Medical Distribution Inc. (2012). NicAlert™ saliva nicotine test. Retrieved from http://www.craigmedical.com/Nicotine_Saliva_tests.htm

Dragano, N., Bobak, M., Wege, N., Peasey, A., Verde1, P. E., Kubinova, R., … Pikhart, H. (2007). Neighbourhood socioeconomic status and cardiovascular risk factors: a multilevel analysis of nine cities in the Czech Republic and Germany. *BMC Public Health, 7*(255). doi:10.1186/1471-2458-7-255

Fiore, M. C., Jaen, C.R., Baker, T. B., Bailey, T. B., Benowitz, N. L., Curry, S. J., …Wewers, M. E. (2008). *Treating tobacco use and dependence: 2008 Update.* Clinical Practice Guideline. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service.

Germain, D., Wakefield, M., & Durkin, S. (2007). Non-smokers' responses when smokers light up: A population-based study. *Preventive Medicine, 45*(1), 21-25. http://ezproxy.uttyler.edu:2144/10.1016/j.ypmed.2007.03.012

Gilmore, A. B., & McKee, M. (2004a). Moving east: How the transnational tobacco industry gained entry to the emerging markets of the former Soviet Union: Part I: Establishing cigarette imports. *Tobacco Control, 13*, 143-150. doi: 10.1136Ac.2003.005108

Gilmore, A. B., & McKee, M. (2004b). Moving east: How the transnational tobacco industry gained entry to the emerging markets of the former Soviet Union: Part II: An overview of priorities and tactics used to establish a manufacturing presence. *Tobacco Control, 13*(2), 151-160. doi: 10.1136/tc.2003.005082

Gilmore, A. B., & McKee, M. (2004c). Tobacco and transition: An overview of industry investments, impact and influence in the former Soviet Union. *Tobacco Control, 13*(2), 136-142.

Gilmore, A. B., & McKee, M. (2005). Exploring the impact of foreign direct investment on tobacco consumption in the former Soviet Union. *Tobacco Control, 14*, 13–21. doi: 10.1136/tc.2003.005082

Gilmore, A. B., McKee, M., & Rose, R. (2001). Prevalence and determinants of smoking in Belarus: A national household survey, 2000. *European Journal of Epidemiology, 17*,(3), 245-253.

Gilmore, A.., Pomerleau, J., McKee, M.., Rose. R., Haerpfer, C. W., Rotman, D., & Tumanov, S. (2004). Prevalence of smoking in 8 countries of the Former Soviet Union: Results from the Living Conditions, Lifestyles and Health Study. *American Journal of Public Health, 94*(12), 2177-2187.

Grant, N., Wardle, J., & Steptoe, A. (2009). The relationship between life satisfaction and health behavior: A cross-cultural analysis of young adults. *International Journal of Behavioral Medicine, 16*, 259–268. doi: 10.1007/s12529-009-9032-x

Grim, C. E., Grim, C. M., Petersen, J. R., Li, J., Tavill, F., Kipshidze, N. N., … Kipshidze, N. (1999). Prevalence of cardiovascular risk factors in the Republic of Georgia. *Journal of Human Hypertension, 13*, 243–247.

Kan, M. (2007). Investigating cigarette affordability in 60 cities using the cigarette price-daily income ratio. *Tobacco Control, 16*(6) 429-432.

Kanapeckienė, V., Valintėlienė, R., Beržanskytė, A., Kėvalas, R., & Supranowicz, P. (2009). Health of Roma children in Vilnius and Ventspils. *Medicina (Kaunas), 45*(2), 153-161.

Komatsu, F., Hasegawa, K., Watanabe, S., Kawabata, T., Yanagisawa, Y., Kaneko Y., … Narantuya, L. (2004). Comparison of electrocardiogram findings and lifestyles between urbanized people and ger-living people in Ulaanbaatar, Mongolia. *Atherosclerosis, 175,* 101–108. doi:10.1016/j.atherosclerosis.2004.03.005

Lai, T., Habicht, J., Reinap, M., Chisholm, D., & Baltussen, R. (2007). Costs, health effects and cost-effectiveness of alcohol and tobacco control strategies in Estonia. *Health Policy, 84,* 75–88. doi:10.1016/j.healthpol.2007.02.012

LeGresley, E. M., Muggli, M. E., & Hurt, R. D. (2006). Movie Moguls: British American Tobacco's covert strategy to promote cigarettes in Eastern Europe. *European Journal of Public Health, 16*(5), 505–508.

Lucas, A. (2005). International collaboration in health research. Bulletin of the World *Health Organization, 83*(7), 482.

Magnus, A., Cadilhac, D., Sheppard, L., Cumming, T., Pearce, D., & Carter, R. (2011). Economic benefits of achieving realistic smoking cessation targets in Australia. *American Journal of Public Health, 101*(2), 321-327.

McKee, M., Bobak, M., Rose, R., Shkolnikov, V., Chenet ,L., & Leon, D. (1998). Patterns of smoking in Russia. *Tobacco Control, 7*, 22-26.

Meren, M., Jannus-pruljan, L., Loit, H. M., Põlluste, J., Jönsson, E., Kiviloog, J., & Lundbøck, B. (2001). Asthma, chronic bronchitis and respiratory symptoms among adults in Estonia according to a postal questionnaire. *Journal of Drug Education, 36*(3), 213-231.

Muilenburg, J. L., Legge, J. S., & Burdell, A. (2010). Indoor smoking bans in Bulgaria, Croatia, northern Cyprus, Romania, and Turkey. *Tobacco Control, 19*, 417-420. doi 10.1136/tc2009.029769

Nagy, N., Barabás, K., & Nyári, T. (2004). Attitudes of Hungarian healthcare professional students to tobacco and alcohol. *European Journal of Dental Education, 8*(Supp. 4), 32-35.

Näslund, G. K. (1997). Relationships between health behavior, knowledge, and beliefs among Swedish blue-collar workers. *Scandinavian Journal of Social Medicine, 25*(2), 100-110.

National Cancer Institute. (2010). Prevention and cessation of cigarette smoking: Control of tobacco use (PDQ®). Retrieved from http://www.cancer.gov/cancertopics/pdq/prevention/control-of-tobacco-use/HealthProfessional

Page, R. M., Ihasz, F., Simonek, J., Klarova, R., & Hantiu, I. (2006). Cigarette smoking, friendship factors, and social norm perceptions among Central and Eastern European high school students. *Journal of Drug Education, 38*(4), 307-328.

Page, R. M., Zarco, E. P. T., Ihasz, F., Suwanteerangkul, J., Uvacsek, M., Ching, M-L., … Kalabiska, I. (2008). Cigarette smoking and indicators of psychosocial distress in Southeast Asian and Central-Eastern European adolescents. *Respiratory Medicine, 95*, 954-964. doi:10.1053/rmed.2001.1188

Pardell, H., Roure, E., Drygas, W., Morava, E., Nussel, E., Puska, P., Uhanov, … Salleras, L. (2001). East-West differences in reported preventive practices: A comparative study of six European areas of the WHO-CINDI programme. European *Journal of Public Health, 11*(4), 393-396.

Pomerleau, J., Gilmore, A., McKee, M., Rose R., & Haerpfer, C. W. (2004). Determinants of smoking in eight countries of the former Soviet Union: Results from the Living Conditions, Lifestyles and Health Study. *Addiction, 99*, 1577–1585. doi:10.1111/j.1360-0443.2004.00885.x

Romundstad, P., Janszky, I., Vatten, L., Bjorngard, J. H., Langhammer, A., Mańczuk, M., & Zatoński, W. A. (2011). Cancer risk factors in Poland: The PONS study. *Annals of Agricultural and Environmental Medicine, 18*(2), 251-254.

Rudatsikira, E., Dondog, J., Siziya S, & Muula, A. S. (2008). Prevalence and determinants of adolescent cigarette smoking in Mongolia. *Singapore Medical Journal, 49*(1), 57-62.

Rudatsikira, E., Siziya, S., Dondog, J., & Muula, A. S. (2007). Prevalence and correlates of environmental tobacco smoke exposure among adolescents in Mongolia. *Indian Journal of Pediatrics, 74*(12), 1089-1093.

Rupert, J., & Frankel, G. (1996, November 19). In ex-Soviet markets, U.S. brands took on role of capitalist liberator. *Washington Post*. Retrieved from http://www.washingtonpost.com/wp-srv/national/longterm/tobacco/stories/global3.htm

Schultz, A. (2004). Role of research in restructuring global healthcare for the 21st century. *Nursing Administration Quarterly, 28*(2), 133-143.

Shahrir, S., Wipfli, H., Avila-Tang, E., Breysse, P. N., Sarnet, J. M., Navas-Acien, A. (2011). Tobacco sales and promotion in bars and nightclubs form large cities from around the world. *Tobacco Control, 20*(4) , 285-290. doi:10.1136/tc2010.040220

Shkolnikov, V., McKee, M. Leon, D., & Chenet, L. (1999). Why is the death rate from lung cancer falling in the Russian Federation? *European Journal of Epidemiology, 15,* 203-206

Sovinová, H., & Czémy, L. (2000). Marketing, use, and health effects of tobacco in Eastern Europe. *Journal of Substance Abuse, 5,* 185-189.

Steptoe, A., & Wardle, J., (1992). Cognitive predictors of health behavior in contrasting regions of Europe. *British Journal of Clinical Psychology, 31*, 485-502.

Steptoe, A., Wardle, J., Cui, W., Baban, A., Glass, K., Pelzer, A., … Vinck, J. (2002). An international comparison of tobacco smoking, beliefs and risk awareness in university students from 23 countries. *Addiction, 97*, 1561-1571.

Steptoe, A., Wardle, J., Cui, W., Bellisle, F., Zotti, A-M., Baranyai, R., & Sanderman, R. (2002). Trends in smoking, diet, physical exercise, and attitudes toward health in European university students from 13 countries, 1990–2000. *Preventive Medicine, 35*, 97–104. doi:10.1006/pmed.2002.1048

Szaflarski, M. (2001). Gender, self-reported health, and health-related lifestyles in Poland. *Health Care for Women International, 22*, 207–227.

Wold, J. L., Williams, A. M., & Kobaladze, A. (1999). Health risks of health care workers; Health risk appraisal results for the newly independent country of Georgia. *American Association of Occupational Health Nurses, 47*(4), 151-155.

World Bank. (n.d.). Gross national income per capita 2010, Atlas method and PPP. Retrieved from http://siteresources.worldbank.org/DATASTATISTICS/Resources/GNIPC.pdf.

World Health Organization. (2012). Tobacco free initiative: Tobacco control country profiles. Retrieved from http://www.who.int/tobacco/surveillance/policy/country_profile/en/index.html#M

World Health Organization. (2013). Tobacco free initiative (TFI). Toabacco facts. Retrieved from http://who.int/tobacco/mpower/tobacco_facts/en/

Zatonski, W., Cedzynska, M, Tutka, P., & West, R. (2006). An uncontrolled trial of cytisine (Tabex) for smoking cessation. *Tobacco Control, 15*, 481–484. doi: 10.1136/tc.2006.016097

Chapter 3. Evaluation of a Motivational Coaching Intervention to Impact Smoking Habits of Male Mongolian University Students

Abstract

Problem: High smoking prevalence rates have been reported in Mongolia. Limited research has been found investigating interventions that will help male Mongolian university students (MMUS) attain a smoke-free lifestyle. Objectives: The purpose of this study was to evaluate the impact of a motivational coaching intervention (MCI) on smoking cessation autonomous self-regulation (SCASR) and smoking frequency and intensity among MMUS. Also, the research design and implementation were evaluated for feasibility and effectiveness. Hypotheses: MMUS will have increased SCASR and decreased smoking frequency and intensity after a MCI intervention. Methods: A convenience sample of smoking MMUS was recruited to participate in one brief smoking cessation lesson and four MCI sessions. The t-test was used to analyze differences in SCASR scores and smoking frequency and intensity between baseline, immediately post-MCI sessions, and 2- to 4-months post-MCI. Results: For MMUS who participated in a MCI, SCASR scores and smoking frequency and intensity decreased between baseline and final data collection episodes, but none of these changes reached the level of significance. High participant attrition levels occurred, which may have confounded statistical findings. Strengths and weaknesses of the study design were reported as well.

Keywords: autonomous self-regulation, Mongolia, motivational interviewing, smoking cessation

The World Health Organization (WHO) estimated that the annual global tobacco-related mortality rate is 5.4 million lives and that tobacco use "is a risk factor in six of the eight leading causes of deaths in the world" (2013). In spite of the known deadliness of this addiction, the WHO reported that tobacco use was increasing in developing countries. Unfortunately, Mongolia is a nation with a high male smoking prevalence rate, rendering this population at risk for significant tobacco related morbidity and mortality.

Significance Statement

Tobacco smoking is a risk factor in the two leading causes of death in Mongolia, cardiovascular problems and cancers (Ministry of Health, Mongolia, 2010). According to the World Bank, 2009 smoking prevalence rates for males and females ages 15 years and older were 48% (World Bank, 2013b) and 6% (World Bank, 2013a) respectively. Other studies reported even higher rates for both men and women. From 1999 data, smoking prevalence rates of 55% for men and 19% for women were noted (Martiniuk et al., 2006). Also, smoking prevalence data from restaurant workers in the capital city, Ulaanbaatar, showed smoking rates of 63.5% for men and 21.3% for women (Chang et al., 2009). A study evaluating 1200 randomly selected Ulaanbaatar residents over age 19 reported ever-smoker prevalence rates of 76.9% for males and 21.4% for females (Munkhjargal & Ariunzaya, 2012). The smoking prevalence among Mongolian college students was recorded at 86.3% in a 1999 WHO and Mongolian Ministry of Health report cited by Baasanjav, Sovd, Byambajav, and Byambaa (n.d.). While smoking has been prevalent among men for years, higher smoking rates among women are a relatively new

phenomenon, as smoking by females was traditionally viewed negatively (T. Tsolmon, personal communication, October, 2011). Tsolmon reported that university women tended to smoke in locations less noticeable to the public eye to avoid being identified as smokers.

Purpose of the Research Study

The purpose of this study was to evaluate the effectiveness of a motivational coaching intervention (MCI) to increase smoking cessation autonomous self-regulation (SCASR) and decrease smoking frequency and intensity among male Mongolian university students. This study incorporated strategies relatively novel to Mongolia, such as the use of motivational interviewing (MI) skills, smoking cessation intervention delivery by nursing students, and planned chemical verification of smoking cessation. This study was implemented as a pilot study in which evaluation included not only changes in smoking motivation and behaviors by participants but also an assessment by the interventionists of design and implementation feasibility, strengths, and weaknesses.

Theoretical Framework

The theoretical framework guiding the study, the smoking cessation intervention model (Appendix A, Figure 1), was developed by the researcher and was based on self-determination theory. The smoking intervention model proposes that decreasing a client's smoking determinants will lead to decreased smoking behavior. From a review of smoking research literature, several smoking determinants have been identified: low smoking cessation autonomous self-regulation (Niemiec, Ryan, Patrick, Deci, & Williams, 2010), physical symptoms (Moran, Wechsler, & Rigotti, 2004; Thompson et al., 2007), low smoking cessation self-efficacy (Kear, 2002; Kenny & Holahan, 2008),

negative affect (Kenny & Holahan, 2008; Schleicher, Harris, Catley, & Nazir, 2009), and social milieu (Moran et al., 2004; Thompson et al., 2007; Wetter et al., 2004). This current study evaluated the impact of a motivational coaching intervention on only one smoking determinant in the model. Specifically, it attempted to increase SCASR in order to decrease smoking intensity and frequency.

The theory underlying this framework was self-determination theory (SDT). SDT was established on three primary constructs: autonomy, competence, and relatedness (Ryan, Patrick, Deci, & Williams, 2008). The SDT construct of autonomy describes behavior motivated by personal value as opposed to behavior motivated by coercion or some other external factor. With respect to adoption of a new health behavior, behavior self-regulation is achieved when the client chooses to adopt and continue a behavior for personally recognized values. Another SDT construct is competence, which refers to one's mastery of skills needed to achieve a goal. While this idea is similar to the previously mentioned concept of self-efficacy, Ryan et al. (2008) used the term competency to emphasize the conceptual distinction that in SDT, skill mastery is not viewed as sufficient in itself to produce desired behavioral changes without accompanying internal motivation. The third SDT construct, relatedness, refers to a relationship which conveys positive regard and empathy and enhances receptivity to advised health behaviors (Ryan et al., 2008). SDT proposes that autonomous motivation for a particular behavior, competence in that behavior, and a supportive relationship promote the adoption and maintenance of the specified behavior (autonomous self-regulation).

The intervention in this study, MI-based coaching sessions regarding smoking behaviors, was used to try to increase smoking cessation autonomous self-regulation and subsequently decrease smoking frequency and intensity. MI is a non-confrontational patient-centered counseling strategy that uses identification of discrepant client goals and behaviors to build internal motivation to change (Rollnick, Miller, & Butler, 2008). Recognizing that ambivalence is a common barrier to initiation of changes in health behaviors, counselors can use key MI strategies of showing empathy, highlighting discrepancy between intrinsic client goals/values and an unhealthy behavior, not engaging client resistance to change, and promoting self-efficacy to change the targeted behavior in order to help clients resolve ambivalence that is blocking behavior change. Rather than taking the role of an authoritarian prescriber of client behaviors, the MI counselor acts as a guide to elicit the choice of healthy behaviors from a client and supports the client's adoption of self-selected behavior changes.

Conceptual and Operational Definitions of the Variables

Smoking cessation autonomous self-regulation. In self-determination theory, autonomous self-regulation is defined as "behaving with the experiences of volition and self-endorsement" (Niemiec et al., 2010, p. 124). The conceptual definition of smoking cessation autonomous self-regulation is motivation to decrease smoking that is based on the personal desires and values of the participant. The operational definition of smoking cessation autonomous self-regulation is the mean of response scores on the treatment self-regulation questionnaire-smoking's (TSRQ-S) autonomous motivation subscale (Williams, Ryan, & Deci, n.d.) (Appendix B). This subscale consists of question numbers 1, 3, 6, 8, 11, and 13 from the comprehensive TSRQ-Smoking 15 item survey.

Smoking frequency. The conceptual definition of smoking frequency is the number of days the participant smoked an entire cigarette during a month (Marcus, Giovino, Pierce, & Harel, 1993). The operational definition of smoking frequency is the participant's self-reported average number of days with smoking activity in a month. (Appendix C, Question 2)

Smoking intensity. The conceptual definition of smoking intensity is the average number of cigarettes smoked per day on days the participant smokes (Marcus et al., 1993). The operational definition of smoking intensity is the self-reported average number of cigarettes smoked per day on days that the participant smokes. (Appendix C, Question 3)

Motivational coaching intervention. The conceptual definition of motivational interviewing is **"**a collaborative, conversation to strengthen a person's own motivation for and commitment to change" (Miller & Rollnick, 2010). The operational definition of the motivational coaching intervention is a series of four 30 minute individual motivational coaching sessions scheduled within an approximately five week period for the purpose of increasing smoking cessation autonomous self-regulation and decreasing smoking frequency and intensity.

Review of the Literature

To date, only one published Mongolian smoking cessation study has been found. This study by Baigalmaa, Nishimura, and Itko (2006) involved participants ages 16-57 years (n = 517) from the nation's three largest cities. Participants were given group counseling (12-16 subjects per group) for five days. Counseling was based on the 5A

program (ask, assess, advice, assist, arrange). The reported success rate one-year follow-up was 65%. In this study successful smoking cessation results were obtained solely by phone contact, so no physical verification (i.e., cotinine testing) was performed on reported quitters. Attendance records for the group sessions and attrition rates for this study were not reported. The success rate noted in this study is significantly higher than treatment success expectations reported in the United States published clinical practice guideline for treating tobacco use (Fiore et al, 2008), which reported expected cessation rates of 10.2% (CI [95%] 8.5-12) with physician advice to quit and 13.9% (CI [95%] 11.6-16.1) and 16.8% (CI [95%] 14.7-19.1) for group and individual counseling sessions respectively.

The clinical practice guideline for treating tobacco use (Fiore et al., 2008) identified factors improving cessation success as high client motivation, readiness to change, at least moderate levels of self-efficacy for smoking cessation, and strong social support for cessation. In contrast, lower levels of cessation have been related to nicotine dependency, mental health problems and substance abuse, elevated amounts of stress, and close proximity to other smokers. Individual counseling sessions were one of the recommended interventions delineated by this clinical practice guideline (Fiore et al., 2008). Success rates of various counseling designs and strategies were also discussed based on findings from meta-analysis studies.

The clinical practice guideline for treating tobacco use (Fiore et al., 2008) noted that more and longer person-to-person sessions had better success rates than fewer and shorter sessions. A meta-analysis study assessing optimal length of intervention sessions found that session durations greater than 10 minutes, classified as higher intensity

counseling, were reported to have success rates at 22.1% (CI [95%] 19.4-24.7) compared to a non-treatment success rate of 10.9%. Increasing total contact time across all counseling sessions (up to 300 minutes) also improved cessation rates, with times of 91-300 minutes achieving an the highest abstinence rate of 28.4% (CI [95%] 21.3-35.5) compared to 3 minutes (14.4%, CI [95%] 11.3-17.5) and no minutes (11%). With regards to the recommended number of sessions, meta-analysis study results showed that participating in four to eight sessions had a reported abstinence rate of 20.9% (CI [95%] 18.1-23.6) compared to two or three session producing abstinent rates of 16.3% (CI [95%] 13.7-19) and none or one session resulting in abstinence rates of 12.4%. Sessions were defined as some type of person-to-person contact and were not specific for a particular type of counseling, such as motivational interviewing (MI).

While the clinical practice guideline for treating tobacco use (Fiore, et al., 2008) reported on the efficacy of combining counseling and medication therapies, due to constraints with pharmacological therapies in Mongolia, these types of interventions were not included in this proposed study. The clinical practice guideline for treating tobacco use (Fiore, et al., 2008) also reported that while smoking cessation advice from a physician resulted in the most successful abstinence rates (19.9%, CI [95%] 13.7-26.2) of all types of clinicians, advice from non-physician clinicians (15.8%, CI [95%] 1 2.8-18.8) was significantly better than no clinician involvement (10.2%) or self-help (10.9%, CI [95%] 9.1-12.7).

SDT theory has demonstrated usefulness in a number of interventional studies designed to impact health behavior change, including increasing physical activity and desired weight loss (Silva et al, 2010) and increasing self-competence in diabetes self-

management and improving diabetic glycemic control (Williams, McGregor, Zeldman, Freedman, & Deci, 2004). A limited number of community based studies have been located applying SDT theory to smoking cessation interventions. Williams et al. (2006) found an association between increased autonomous self-regulation, competence levels, and six month tobacco cessation rates. Niemiec et al. (2010) reported study results showing that increased autonomous self-regulation was associated with decreased smoking, which in turn was associated with increased vitality.

SDT and MI are seen as compatible and complementary (Markland, Ryan, Tobin, & Rollnick, 2005; Vansteenkiste, & Sheldon, 2006). Studies reporting the use of MI in smoking cessation have been conducted in multiple international locations, including Spain (Soria, Legido, Escolano, Yeste, & Montoya, 2006), Turkey (Erol & Erdogan, 2008; Karatay, Kublay & Emiroğlu, 2010), and the Netherlands (Bredie, Fouwels, Wollersheim, & Schippers, 2011). These studies supported the efficacy of using MI to achieve smoking cessation among different cultures. In addition, MI has been used in the US as a smoking cessation intervention among undergraduates (Harris et al., 2010; Prokhorov et al., 2008) with positive results.

Lai, Cahill, Qui, and Tang (2010) presented a meta-analysis of fourteen studies evaluating the effectiveness of MI for smoking cessation. While the meta-analysis supported the use of MI as an effective intervention, many questions related to optimum use of this intervention remained unanswered. The optimal frequency or length of MI interventions was unclear. Studies in the meta-analysis ranged from one to four sessions. Multiple sessions were not clearly seen as being more beneficial. However, as noted previously, the clinical practice guideline for tobacco use (Fiore, et al., 2008)

recommended four or more sessions, and only one study in this meta-analysis met this criteria. Subsequently, it is not known whether delivering four or more MI interventions would result in significantly more benefit than delivering less than four. The duration of a counseling session was recommended to be 20 or more minutes. There was no evidence that supported the use of follow-up phone calls to increase smoking cessation rates after face to face MI counseling.

Research Design and Methods

This research was designed as a quasi-experimental single group study to compare the difference in SCASR and smoking frequency and intensity in male Mongolian university students pre- and post-intervention of a brief smoking cessation lesson plus four 30 minute MCI sessions. This design was chosen in order to determine the effectiveness of the intervention by comparing post-intervention participant smoking motivations and behavior results with those prior to the intervention.

Hypotheses

1. Mongolian male university students will have an increase in smoking cessation autonomous self-regulation scores after delivery of a smoking cessation motivational coaching intervention.
2. Mongolian male university students will have a decrease in smoking frequency after delivery of a smoking cessation motivational coaching intervention.
3. Mongolian male university students will have a decrease in smoking intensity after delivery of a smoking cessation motivational coaching intervention.

Human Subjects Protection

Permission for the undertaking of this study at Ulaanbaatar University (UBU) was granted by the UBU president and dean of graduate studies (Appendix D).

The Institutional Review Board (IRB) of the University of Texas at Tyler (UTT) gave separate approvals for two components of this undertaking, the smoking cessation intervention study (Appendix E) and a reliability assessment of the Mongolian version of the TSRQ-S (Appendix F, Table 1). Participation in the research by students was voluntary, and procedures were designed to maintain confidentiality of participant data. Informed consent instructions included advising the smoking cessation participants that they could withdraw from the study at any time without penalty.

Sample

The population of interest for this study was male Mongolian university students. Female students were excluded due to concerns that given cultural attitudes towards women smokers, they may be reluctant to join a study related to smoking. A convenience sample of current smoking male students was recruited from Ulaanbaatar University, which has both undergraduate and graduate students and enrolls a student body of about 3500. Approximately 40% of this group is male. Inclusion criteria included being a male age 18 years or older, being a university student with anticipated enrollment in the Fall, 2012 and Spring, 2013 semesters, being able complete the questionnaires and participate in counseling independently, and answering "yes" to the question "do you currently smoke some days or every day?" Exclusion criteria included having a speech or hearing impairment that would complicate delivery of the intervention in an effective manner. Also, UBU nursing students were excluded from the study, as the principle investigator (PI) was a professor at the UBU School of Nursing.

For statistical analysis, effect size is an important factor in determining sample size. Different effect sizes have been reported in smoking cessation research studies.

Vesiler et al. (2008) argued that effect size in smoking cessation research is theory dependent. Although SDT was not evaluated, other theories ranged from 0 -.18. The impact of cultural differences on effect size was not discussed in this article. A meta-analysis of 23 smoking cessation controlled trials on non-pregnant participants using MI demonstrated a long term effect size of .17 (Hettma & Hendricks, 2010). However, when international studies were evaluated as a sub-group, the effect size was .75 and .43 for short- and long-term follow-up respectively. Humeniuk et al. (2011) discussed the varying impact of a motivational intervention for substance abusers across different nations (Australia, Brazil, India, and the US). While intervention effect varied both by substance and nation, it was generally higher in non-US populations. As previously mentioned, a single published smoking cessation study from Mongolia reported a 65% success rate in smoking cessation (Baigalmaa et al., 2006)

For this study, an effect size of .5 was chosen. The pre-set α was .05, and the power was .8. Given the continuous level of the data, a paired t-test was used to evaluate differences in SCASR and smoking frequency and intensity between baseline, immediate post-intervention, and final data collection episodes (Appendix G, Figure 2). Power analysis with G-Power recommended a sample size of 34 (Faul, Erdfelder, Buchner, & Lang, 2009). Due to difficulties with recruitment of participants, a total of 30 students began participating in the study. Figure 3 (Appendix H) shows the recruitment and retention numbers of the participants.

Instruments

Translation. All instruments and the consent form for the smoking cessation participants were translated into Mongolian using forward/backward translation, after

which bilingual review committees met to resolve any translation difficulties. The translated versions were then piloted on multiple UBU nursing students. No subsequent changes were required to the data collection forms post-piloting, but several changes were made to the consent form to enhance clarity and maintain accuracy of the final version.

Smoking cessation autonomous self-regulation. Autonomous self-regulation as motivation for smoking cessation was measured by the autonomous motivation subscale of the TSRQ-S (Williams et al., n.d.). The TSRQ-S is a 15 question survey which may be divided into three subscales (autonomous motivation, controlled motivation, and amotivation).The autonomous motivation subscale consists of six questions: 1, 3, 6, 8, 11, and 13. The subscale asks questions such as "The reason I would not smoke is because it is consistent with my goals in life". The Likert type response scale ranges from 1 ("not at all true") to 7 ("very true"). The participant's score is determined by calculating the average of the responses from the six questions. Reliability of this subscale has been previously reported at $\alpha = .86$ and .89 (Williams et al., 2006). Factor analysis has been evaluated on this subscale previously, and the scale has demonstrated good construct validity (Williams et al., 2006). Content validity is appropriate. It is this subscale that has been reported in a previous smoking cessation study.

In this study, the above noted six questions of the autonomous motivation sub-scale were used to assess SCASR (Appendix B) at baseline, immediately after the fourth MCI intervention, and at the final 2- to 4-month post-intervention data collection episode. The other subscales included in the comprehensive TSRQ-S survey consisted of the controlled motivation subscale (questions 2, 4, 7, 9. 12, 14) and the amotivational

subscale (questions 5, 10, 15). Since these variables were not assessed in this study, these questions were not included on the participant version of the questionnaire. The authors gave permission for use of this instrument via the selfdetermination.org website if the researcher was registered with selfdeterminationtheroy.org and verified that the instrument would be used for academic research (selfdeterminationtheory.org, n.d.). These conditions were met by the researcher.

Internal consistency of the Mongolian version of the TSRQ-S autonomous motivation sub-scale used in this study was assessed in a separate evaluation. Copies of the six-item survey were prepared which included three additional questions asking age, gender, and smoking status (smoker or nonsmoker). The PI and a translator visited university classrooms (computer science, economics, English language, law) at the beginning or end of a lecture period to recruit volunteers to complete the survey. Students were informed that the purpose of the study was to evaluate the survey and both smokers and nonsmokers could participate. Students were instructed not to put their names on the survey and that they must be age 18 or over to participate. Completion of the survey was considered consent.

In all, 100 surveys were distributed, and 92 were returned with sufficient completion for inclusion in data entry. Of the 92 participants, 28 were male and 64 were female. Ages ranged from 18-28. The smoking prevalence rate was approximately 55.6% for males and 16.1% for females. These rates are remarkably similar to those reported for Mongolia in 1999 data by Martiniuk et al. (2006) (males, 55%; females, 19%), and slightly higher than 2009 data reported by the World Bank (48% male [World Bank, 2013b] and 6% female [World Bank, 2013a]). While Cronbach's alpha for all participants

was .87, it did vary slightly by gender (Appendix I, Table 1). Overall, these results demonstrated good internal consistency for the Mongolian version of the TSRQ-S autonomous motivation sub-scale.

Questionnaires on smoking habits. There were three smoking history instruments. The initial questionnaire on smoking habits (Appendix C) collected information on both past smoking experiences (such as age of smoking initiation) and current smoking habits. There were two questionnaires that were used for follow-up smoking habits data collection, the brief questionnaire on smoking habits (Appendix J) and the brief questionnaire on smoking habits after counseling (Appendix K). The follow-up questionnaires did not repeat questions regarding pre-intervention smoking habits, as responses to these questions would not change. The first seven questions on the initial questionnaire on smoking habits were adapted by the researcher from questions used on the Global Adult Tobacco Survey (Global Adult Tobacco Survey Collaborative Group, 2010) and the Behavioral Risk Factor Surveillance System Survey (CDC, 2011a). Neither survey required special permission for use (CDC, 2011b; Global Adult Tobacco Survey Collaborative Group, 2011). Questions 8-11 were designed to assess information specific for the purposes of this study.

The initial questionnaire asked the participant to record a number to indicate the age in years at smoking initiation, the average number of days per month with smoking activity, the average number of cigarettes smoked per day on days with smoking activity, the previous number of smoking cessation attempts, and the number of hours between finishing smoking one cigarette and desiring another. Participants were also asked to indicate their desire to quit (want to quit in one month, in 1 year, not ever, don't know),

methods previously used to try to quit (never tried, nicotine replacement, traditional medicine, counseling [group or individual], phone counseling, other) and their perception on a zero to ten scale of the importance of quitting smoking (0 = not important, 10 = very important), their ability to quit (0 = not able, 10 = very able), and their readiness to quit smoking (0 = not ready, 10 = very ready). A final question assessed recent exposures to smoking cessation influences which could reveal confounding factors when evaluating test results. This data was obtained on all participants at the initiation of the study.

Immediately after completion of four counseling sessions participants were given the brief questionnaire on smoking habits, which asked the same questions discussed above with the exception of questions related to smoking initiation, previous quit attempts (number of attempts and methods used), and previous confounding exposures. For the final data collection episode, students who had completed four counseling sessions were given the brief questionnaire on smoking habits after counseling, which included the brief questionnaire on smoking habits questions plus the write-in response question "in your experience, what is the biggest challenge to quit smoking?" If students had not completed the four counseling sessions, for their final data collection episode they were given the brief questionnaire on smoking habits.

Demographic data. The demographic questionnaire (Appendix L) was used during the baseline data collection episode and asked participants to report age in years, ethnicity (Durvud, Khalkha, Khazakh, other), academic year (1st, 2nd, 3rd, 4th, graduate level, other), major area of study (agriculture, business administration, computer, economics, English language, Korean language, Korean studies, law, Mongolian studies,

Nursing, other), and living location before beginning studies at the university (Darkhan, Erdenet, Ulaanbaatar, countryside, other).

Procedures

Research assistant training. In becoming equipped for this research study, the PI participated in a 14-hour introductory MI workshop led by a Motivational Interviewing Network of Trainers (MINT) educator. Prior to the recruitment of participants, seven volunteer UBU nursing students were trained as research assistants (RA) by the PI. RA orientation included a lecture emphasizing the importance of maintaining ethical research standards when involving human subjects, an overview of SDT, training in motivational interviewing, and an overview of testing methods being used during the study.

The research assistant MI training included an overview of MI principles and strategies, exercises to rehearse counseling skills and strategies used in MI, and practice counseling sessions. MI training was planned for 16 hours of instruction for the students. Due to variable student schedules and availability, actual training time varied between RAs (Appendix M, Table 2). Four RAs completed between 16-21 hours of training, two RA completed between 14-16 hours of training. One student who began training was not able to complete training and was replaced by another student after training had started. This replacement RA participated in both group and special training sessions to complete a total of 11.5 hours of training.

In addition to participating in counseling sessions during the training times, each RA was required to videotape a practice counseling session which was subsequently evaluated by the PI for fidelity to MI counseling methods. This was accomplished with

the assistance of a translator, as the PI is not fluent in Mongolian. The PI used the Motivational Interviewing Rating Worksheet (MIRW) (Martino et al., 2006) to evaluate each RA's ability to provide counseling in the spirit of MI (Appendix N: Figure 3a, Figure 3b, Figure 3c).

The MIRW ranks counselors on a 1-7 scale for adherence and competence in MI consistent and inconsistent items. For adherence scores, better performance is indicated by higher consistency scores and lower inconsistency scores. For competency, higher scores indicate better MI performance for both MI consistent and inconsistent items. An adherence score of 4 indicates that the frequency of the item occurs "somewhat" of the time, while a competency score of 4 is "adequate". RAs were required to achieve an average score of 4 or greater among MI consistent adherence items and both MI consistent and inconsistent competency items before counseling participants. Further, an average score of less than 4 was required among MI inconsistent adherence ratings. The RAs' evaluation scores for MI competence and adherence are listed in Appendix M (Table 2).

In addition to training in MI, basic smoking cessation strategies were discussed with the students, including information that can be accessed from the National Institutes of Health (2012), smokefree.gov (n.d.a), and smokefree.gov (n.d.b) websites. RAs were reminded, however, that this information should not be delivered in an authoritative lecture style. As well, they were encouraged to get feedback from participants about this information if it was shared.

Recruitment. Potential participants were informed about the study via a poster and word of mouth. Recruitment was facilitated by offering a restaurant gift certificate to

participants. A further incentive for participation in study activities included two post-study prize drawings for digital cameras. Students who agreed to participate in the study signed a consent form and then completed baseline data collection forms (demographic questionnaire, questionnaire on smoking habits, and the TSRQ-S). Participants were then given a smoking cessation pamphlet about the dangers of smoking and encouraged to quit smoking. This pamphlet was produced by the Adventist Development and Relief Agency of Mongolia for their anti-tobacco activities and was used with permission. Participants were then informed that a research assistant would contact them by phone regarding counseling.

Intervention and data collection. After enrollment into the study, each participant was assigned to an RA for individual counseling. To facilitate this process, the RAs were randomly numbered one through seven. Participants were then assigned to each RA in the order in which they were enrolled. However, prior to accepting their participants, the RAs were asked to review the names of students potentially assigned to them to verify that there were no issues which might complicate a counseling relationship (past or current dating relationship, prior conflict, etc.). One RA requested that a student assigned to her be changed, and the participant was switched with the student for a different RA. RAs were instructed to report any nonprofessional participant interactions during counseling sessions so that counseling assignments could be changed if this occurred. No counselor-participant problems were reported, however.

After accepting their student assignments, the RAs called their participants to schedule 30 minute appointments to discuss smoking. Phone calls were made in a manner such that the participant would not learn the RA's personal phone number. During their

sessions, the RAs were instructed to note the exact duration of the meetings for later analysis of the intervention. Follow-up data collection after the fourth counseling session was undertaken with the brief questionnaire on smoking habits and the TSRQ-S. Significant attrition of participants was encountered during this study, and the majority of students did not receive counseling, largely due to unsuccessful attempts to contact them for appointments (Appendix H, Figure 3).

Two to four months post-MCI participants were contacted to complete the final data collection instruments. For the final data collection episode, all participants were given the TSRQ-S. Those who participated in less than four counseling sessions were given the brief questionnaire on smoking habits, and those who attended all counseling sessions completed the brief questionnaire on smoking habits after counseling. Finally, cotinine testing with NicAlert™ saliva test strips was planned for chemical verification of tobacco-free status for any participant claiming smoking cessation.

Results

Statistical Analysis

The paired t-test was used to identify any differences between pre- and post-intervention SCASR and smoking frequency and intensity. As the hypotheses specified assessment of group change after counseling and a portion of the participants did not participate in counseling, counseled and uncounseled students were evaluated separately. Statistical analysis was completed with SPSS 17. The noted prevalence of missing responses on some surveys and the small sample size should be considered when evaluating results.

Sample

A total of 30 students participated in this study. Selected characteristics of counseled and uncounseled students are listed in Table 3 (Appendix O). The average age of counseled and uncounseled participants was 19.5 and 20.7 years respectively. Smoking initiation age was approximately 15.7 years in both groups. Of the 30 participants in this study, ethnically 93.3% (28) of the participants were Khalkha, which is a bit higher than the 82.4% noted in the general population in the 2010 census (National Statistical Office of Mongolia, n.d.). The remaining two participants self-identified as Khazakh and other. Both of these participated in counseling. Of the eight counseled and 14 uncounseled participants who had previous quit attempts, the majority reported trying a method other than listed on the survey (nicotine replacement [1], traditional medicine [1], counseling [1] and phone counseling [1]). Five participants from each group reported recent exposure to anti-smoking messages. This exposure came from television (4), the internet (1), a magazine (1), and the news (1). Some students did not specify the source.

Baseline SCASR and smoking habits for counseled and uncounseled students are listed in Table 4 (Appendix P). Pre-intervention, a statistical difference between counseled and uncounseled students was noted in respect to self-rated ability to quit (p=.031) (Appendix Q, Table 5). Students in the group that did not participate in counseling rated themselves higher in ability to quit smoking than the students who participated in counseling.

Smoking Cessation Autonomous Self-Regulation

Table 6 (Appendix R) shows the counseled students' mean group scores for SCASR at data collection episodes one and two, two and three, and one and three. No

significant difference in SCASR scores between these data collections episodes was detected by paired t-test. Thus, the first hypothesis was not supported. While the differences were not significant, SCASR scores between the baseline and final data assessment slightly decreased in the counseled group and slightly increased in the uncounseled group of students (Appendix R, Table 6; Appendix S, Table 7). Table 9 displays final data collection mean SCASR results for counseled and uncounseled participants. No significant differences in final SCASR scores were noted between counseled and uncounseled students (Appendix U, Table 9).

Smoking Frequency

Table 6 (Appendix R) shows the counseled students' mean group levels for smoking frequency at data collection episodes one and two, two and three, and one and three. No significant difference in smoking frequency levels between these data collection episodes was detected by paired t-test. Thus, the second hypothesis was not supported. Nonsignificant decreases were noted between baseline and final data collection times for both counseled and uncounseled students (Appendix R, Table 6; Appendix S, Table 7). Table 9 displays final data collection mean smoking frequency results for counseled and uncounseled participants. No significant differences in final smoking frequency levels were noted between counseled and uncounseled students (Appendix U, Table 9).

Smoking Intensity

Table 6 (Appendix R) shows the counseled students' mean group amounts for smoking intensity data collection episodes one and two, two and three, and one and three. No significant difference in smoking intensity between these data collection episodes was

detected by paired t-test. Thus, the third hypothesis was not supported. Nonsignificant decreases in smoking intensity amounts were noted in both counseled and uncounseled students (Appendix R, Table 6; Appendix S, Table 7). Table 9 displays final data collection mean smoking intensity amounts for counseled and uncounseled participants. No significant differences in final smoking intensity amounts were noted between counseled and uncounseled students (Appendix U, Table 9).

Hours Between Smokes

The smoking habits questionnaires assessed the number of hours between the last smoke and feeling the need to smoke again, a variable which was labeled "hours between smokes". Table 7 (Appendix S) and Table 8 (Appendix T) display this variable for uncounseled and counseled participants at different data collection episodes. Paired t-test analysis detected no significant differences between groups or data collection episodes in hours between the last smoke and feeling the need for another one. For both groups longer time periods were reported when comparing baseline and final data collection episodes, but these changes did not reach the level of significance for either group.

Self-Ranked Cessation Importance, Ability, and Readiness

Tables 7 (Appendix S) and Table 8 (Appendix T) display the self-reported rankings for cessation importance, ability, and readiness for the baseline and final data collections for uncounseled and counseled participants respectively. No significant difference was detected between collection episodes for either group. Table 9 (Appendix U) compares both counseled and uncounseled group final rankings, which are not significantly different.

Experienced Challenges with Cessation

At the final data collection episode, participants who had completed four counseling sessions were given the brief questionnaire on smoking habits after counseling, which included the question "in your experience, what is the biggest challenge to quit smoking?" In all, 10 participants answered this question. The most frequent responses were related to the influence of friends or other smokers (3) and addiction, craving, or intolerance to quitting (3). One reported wanting to smoke, while another participant stated it was difficult to stay away from smoking for a long time. Two indicated that there was no difficulty to quitting.

Smoking Cessation

One participant from the uncounseled group claimed to have stopped smoking at the final data collection episode but declined cotinine testing for cessation verification. One counseled participant who had reported quitting at the second data collection episode acknowledged restarting by the time of the last data collection episode. It is unknown how the availability of a test to confirm smoking cessation impacted reporting of smoking activity with the final data collection.

Research Assistant Interviews

While seven RAs participated in counseling, one RA withdrew from the university after the counseling was completed and before the final data collection episode. After leaving the university, she no longer participated in research activities. The remaining six RAs were interviewed by the PI (with the assistance of a translator as needed) to better understand the perspective and experience of the RAs during this study. There were three categories of topics discussed during the interview. Counselors were

requested to give their impressions of successes, challenges, and possible improvements for the counseling process. They also were asked for their recollections of participant reports of methods used during previous quit attempts, challenges and motivations to quit, the significance of peer pressure, and causes for smoking initiation. The PI also solicited their opinion about the feasibility of including women in a future smoking cessation study. At the conclusion of the interview, they were invited to add any additional comments they wished to share.

Perspectives varied considerably among the RAs regarding what worked well during the counseling process. Skills reported to be the most helpful included emphasizing the confidential nature of the counseling relationship and building a trusting relationship, using open-ended questions and reflections, and giving affirmations and encouragement. One RA thought that having participants prioritize value-labeled cards was helpful, while another RA shared that the value cards did not seem useful with her participant. A different counselor reported that the most helpful strategy was asking the participant to self-rate (0-10) his ability to quit/how important quitting was to him. Another RA felt that one of the most important issues for success was whether the participant had social support. This variety of answers does indicate that some common MI skills and strategies were practiced by the RAs.

One of the challenges mentioned was the difficulty in actually getting to meet with participants. RAs would schedule counseling times by phone or at the end of one session, but missed and rescheduled appointments were common. One RA shared that for one participant, six scheduled appointment times resulted in one actual counseling session. To address this challenge, one RA recommended offering small incentives for

participation at each counseling session. Using comfortable facilities in which RAs could provide participants amenities such as beverages was also proposed.

Some of the challenges mentioned indicated RA awareness of the high skill level required for effective counseling, such as considering strategic questions or issues for discussion prior to a session and developing the ability to direct the conversation through the introductory process into more focused topics for counseling. One RA found it challenging to guide participants from discussing cessation to making commitments about cessation-related behaviors. Two RAs noted that their participants voiced little motivation to quit smoking. As MI is supposed to address this problem, it was encouraging to hear one of the RAs state that during the counseling process she believed she heard increased comments about motivation towards quitting. Another RA questioned whether MI was an effective strategy for Mongolian culture because it did not provide concrete content, which she believed would be well received. No other RA voiced this concern. One counselor felt the design should include four hour-long sessions. Another RA believed the counseling would be successful if participants attended all four sessions.

RAs also commented on issues noted during the counseling sessions. On the surveys, the majority of the participants who had previously tried to quit smoking marked "other" when asked which cessation method they used. The RAs reported few comments about "other" methods used to quit. One of the counselees reportedly consumed candy instead of smoking. Overall, this question provided little additional information, and it is still undetermined which cessation methods are most popular within this population.

With respect to issues that were discussed during counseling, the impact of peer pressure was variable. Some participants reported significant peer pressure attempts to keep them smoking, while others had friends who were quite supportive. Most participants mentioned smoking initiation in conjunction with a social situation, generally during the school years prior to the university. One RA mentioned that the cost of cigarettes (approximately $1.00-2.00USD per pack) was not viewed as a deterrent. This would coincide with Kan's (2007) findings that there was high cigarette affordability in many cities of the world. Physical cravings and coping with stress or depression also were reported to complicate the cessation process. While two RAs remembered participants mentioning girlfriends as a motivation to quit smoking, four RAs stated that a significant motivation to quit was health. Further, RAs expressed the suggestion that participants be given more information on the harms of smoking, including watching videos about someone afflicted by tobacco-related diseases.

With respect to suggestions for whom to include in future studies, one of the RAs proposed group counseling including a student who had previously succeeded in quitting smoking, He could serve as a role model to the participants and share firsthand knowledge about coping with withdrawal symptoms and peer pressures. Three RAs agreed that including women in future studies was feasible and that counseling would be an intervention acceptable to women smokers. It was also mentioned that since there were fewer female smokers than male smokers, women trying to quit may experience more social support during the process, which would be helpful. Two RAs, however, had some reservations about counseling women. In order for the counselor to achieve

credibility, it was recommended that the counselor wear sophisticated attire and be several years older than the counselee.

Strengths and Limitations

This study had several strengths. First, the plan for obtaining chemical verification of smoking cessation status provided an objective measure for evaluating survey reports. While the study was ongoing, several RAs reported the potential that their counselees may need testing. In the end, however, no tests were scheduled. Final survey results showed only one student claiming smoke-free status, and that student, from the uncounseled group, declined to take the verification test. It is unknown how participant awareness of cotinine testing impacted data collection results, but the availability of chemical testing does add an additional and important aspect to evaluating reports of smoking cessation.

Another strength of the study was the inclusion of objective measures of intervention delivery fidelity. The RA MI training videos helped ensure that they met minimal skill levels for motivational counseling. Further, the RAs were asked to record the length of their counseling sessions with participants. RAs reported adhering to the 30 minute target length for approximately 81% of the total visits. Other appointment durations spanned from 15 minutes (1 session) to 35 minutes (3 sessions). While the RAs, as student nurses, had not had extensive experience in counseling clients, these measures do provide some evidence of intervention delivery fidelity.

There were also several limitations to this study. As a result of the low number of participants completing the counseling intervention, the study was underpowered for optimal statistical analysis. As an underpowered study, results obtained cannot be

considered conclusive about a motivational coaching intervention's effectiveness for promoting smoking cessation among male Mongolian university smokers.

Another limitation of the study was the fact that MI training and evaluation were done with the assistance of translation. Effective delivery of MI skills requires careful attention to word choice and order by the counselor. If there were difficulties in translation, it is possible that the level of RA competency in MI skills was different than assessed during video evaluation. Low competency in MI delivery would invalidate any assessment of MI usefulness as a counseling intervention among this population. Since fidelity in the delivery of MI skills is essential to accurately evaluate the intervention's effectiveness, it would be advantageous to train counselors in partnership with a national who had received thorough training and practice in MI counseling skills. Delivery of MI training by a native Mongolian speaker could help ensure the highest possible level of MI proficiency among the counselors. Nevertheless, for this study, it was encouraging that while interviewing the RAs post-intervention, they discussed the use of several MI skills during their counseling sessions.

There where limitations related to generalizability of findings as well. The sample for this population was limited to a specific developmental stage and gender. It is unknown how females or those at a different stage in life would respond to this intervention. It is also unknown if participants from a different gender or stage in life would have the same high attrition rates as the male university students did.

Discussion and Recommendations

While findings from this underpowered study may show no post-intervention differences between the counseled and uncounseled students, one curious trend was

noted. The goal of the MCI was to increase SCASR, so it was hypothesized that post-MCI, the SCASR score would increase. Results from the study, however, show nonsignificant decreases in SCASR among counseled students and nonsignificant increases in SCASR among the uncounseled students. There is no difference in scores between groups, however. It is unclear why scores in these two groups would begin to move in a direction opposite than what would be expected, but the changes were nonsignificant and based on a relatively small number of cases, so under these circumstances it would be difficult to speculate on this finding.

As a pilot study, several issues were identified that would need to be considered with respect to planning further research activities. One critical issue was low participation in the study among the target population. While this study was initially envisioned as a control trial study with intervention and control groups, ultimately, a single group design comparing variable levels pre- and post-counseling was implemented due to difficulties with recruitment. Even then, not all participants who enrolled in the study participated in the counseling intervention. In many cases, the contact phone numbers given at the time of study enrollment proved ineffective.

While it would be helpful to get accurate contact information from participants, once contact is made the intervention also must be implemented in a culturally suitable manner. For participants from a traditionally nomadic culture, structuring intervention delivery around specific appointment times may have low participant acceptability. If there is baseline low motivation to stop smoking or attend counseling among male university students in general, this could make attaining and maintaining the optimal number of participants for a similar quantitative study in this population difficult.

Further, it would also be important to evaluate other variables which may impact intervention participation levels and smoking behaviors such as depression, the number of smoking and nonsmoking friends, and the presence of withdrawal symptoms. Understanding the impact of these variables on smoking and cessation behaviors may help refine the smoking cessation model for future studies. Useful information also could be obtained from students participating in a qualitative design study partnered with a smoking cessation intervention. Qualitative research could uncover the cultural aspects of smoking in this culture, the experiences of becoming an ex-smoker in Mongolia, and the acceptability of different intervention and delivery options. These studies could be accomplished with fewer participants and could lead to improvements in future counseling interventions.

With respect to potential changes in the counseling intervention itself, several issues can be considered. During the RA post-intervention interviews, one nursing student suggested a group counseling format. Fiore et al. (2008) reported that individual counseling was more effective than group counseling (estimated abstinence rates [95% CI]: 16.8 [14.7–19.1] v. 13.9 [11.6–16.1]). It is unknown if these results would differ by culture.

Potentially positive aspects to group counseling are that it would provide members with some social support and perhaps encourage more consistent attendance if it was viewed as a meeting of friends. Students responding to the written question about cessation challenges noted the impact of friends or social situations in conjunction with their smoking. Providing group support may help them overcome the influence other smokers have in their lives. The only other known Mongolian smoking cessation study

utilized group counseling for intervention delivery (Baigalmaa et al., 2006). While attrition of participants was not discussed and no cotinine testing was used for cessation verification, they did report a 65% cessation rate. A study comparing group and individual counseling results would help determine the effectiveness of this strategy in Mongolian culture.

Another suggestion proposed during RA interviews was presenting videos and other materials depicting the unpleasantness of tobacco related morbidities. Study participants had received a pamphlet about the dangers of smoking upon entry into the study. This pamphlet briefly discussed tobacco related health problems of the skin, teeth, lungs, blood vessels, eyes, nerves, and reproductive systems. Several pictures were included. It listed the financial cost of smoking and the annual global death rate attributed to tobacco use. The pamphlet also suggested six strategies for quitting smoking. It is unknown how many of the participants read this information. Given that health concerns were voiced as a motivation for quitting smoking during the counseling sessions, it seems clear that at least some of the participants had a basic awareness that smoking was harmful.

While awareness of health risks can be useful at some level, previous research has failed to demonstrate a clear relationship between risk awareness of health problems associated with smoking and decreased smoking behavior (Steptoe & Wardle, 1992; Näslund, 1997; Steptoe, Wardle, Cui, Babon, et al., 2002; Steptoe, Wardle, Cui, Bellisle, et al., 2002). In fact, in some countries studied, there was actually a positive relationship between smoking behavior and risk awareness (Steptoe & Wardle, 1992; Steptoe, Wardle, Cui, Babon, et al., 2002). Thus, while it may seem logical that focusing

interventions to increase risk awareness would improve cessation outcomes, this strategy by itself lacks scientific justification.

On the other hand, including videos or handouts with a different focus may prove beneficial. The clinical guidelines for treating tobacco use (Fiore et al., 2008) recommended use of multiple formats during interventions (i.e., videos, internet, one-on-one counseling, etc.), with use of three to four formats being more effective than one format (estimated abstinence rates [95% CI]: 23.2 [19.9–26.6] v. 15.1 [12.8–17.4]). The two types of interventions most highly recommended for treatment activities included problem solving/skills training and encouragement/support.

While the current study focused on enhancing motivation to quit smoking, which would include providing encouragement and support, no standardized lessons related to problem solving or skills training were planned. One difference noted between participants who attended counseling and those who did not was a lower level of self-rated ability to quit among attenders. Those sensing lower ability for quitting may need and desire skill building opportunities to improve tobacco refusal skills and management of symptoms related to stress or cravings. It is possible that adding MI-compatible videos, role playing exercises, or handouts related to these topics may enhance effectiveness of the overall intervention.

Nursing research is essential to help establish best practice nurse-led smoking cessation interventions. While this motivational coaching intervention study lacked a sufficiently sized sample for optimal evaluation of the intervention's statistical significance, it did introduce several options for nurse-led smoking cessation therapies. Further research can demonstrate which smoking cessation interventions, correctly

performed, can significantly decrease smoking rates in Mongolia. Nurses (and nursing students) have great potential to help clients achieve tobacco-free status. Future nursing research studies may provide the knowledge needed to help nurses reach this potential.

References

Baasanjav, M., Sovd, T., Byambajav, K., & Byambaa, T. (n.d.). Assessment of the conformity of national policies with the framework convention on tobacco control in Mongolia. Retrieved from http://www.dfid.gov.uk/R4D/PDF/Outputs/RITC/Mongolia-Final_Report-Tobacco_report_Eng.pdf

Baigalmaa, D., Nishimura, A., & Itko, K. (2006). Smoking cessation rate 12 months after a group counseling program in Mongolia. *Asian Pacific Journal of Cancer Prevention, 7*(3), 399-402.

Bredie, S. J. H., Fouwels, A. J., Wollersheim, H., & Schippers, G. M. (2011). Effectiveness of nurse based motivational interviewing for smoking cessation in high risk cardiovascular outpatients: A randomized trial. *European Journal of Cardiovascular Nursing, 10*, 174–179.

Centers for Disease Control and Prevention (2011a). Behavioral Risk Factor Surveillance System Survey Questionnaire. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention. (2011b). BRFSS Frequently asked questions (FAQs). Retrieved October 22, 2011 from http://www.cdc.gov/brfss/faqs.htm

Chang, S. H., Delgermaa, V., Mungun-Ulzii, K., Erdenekhuu, N., Odkhuu, E., & Huang, S. L. (2009). Support for smoke-free policy among restaurant owners and managers in Ulaanbaatar, Mongolia. *Tobacco Control, 18*, 479–484. doi:10.1136/tc.2009.030486

Erol, S., & Erdogan, S. (2008). Application of a stage based motivational interviewing approach to adolescent smoking cessation: The transtheoretical model-based study. *Patient Education and Counseling, 72*, 42–48.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160.

Fiore, M. C., Jaen, C.R., Baker, T. B., Bailey, T. B., Benowitz, N. L., Curry, S. J., …Wewers, M. E. (2008). *Treating tobacco use and dependence: 2008 Update.* Clinical Practice Guideline. Rockville, MD: U.S. Department of Health and Human Services. Public Health Service.

Global Adult Tobacco Survey Collaborative Group. (2010). *Global Adult Tobacco Survey (GATS): Core Questionnaire with Optional Questions, Version 2.0*. Atlanta, GA: Centers for Disease Control and Prevention.

Global Adult Tobacco Survey Collaborative Group. (2011). *Tobacco questions for surveys: A subset of key questions from the Global Adult Tobacco Survey (GATS), 2nd Edition*. Atlanta, GA: Centers for Disease Control and Prevention.

Harris, K. J., Catley, D., Good, G. E., Cronk, N. J., Harrar, S., & Williams, K. B. (2010). Motivational interviewing for smoking cessation in college students: A group randomized controlled trial. *Preventive Medicine, 51*(5), 387-393.

Hettema, J. E., & Hendricks, P. S. (2010). Motivational interviewing for smoking cessation: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 78*(6), 868–884.

Humeniuk, R., Ali, R., Babor, T., Souza-Formigoni, M. L. O., de Lacerda, R. B., Ling, W., … Vendetti, J. (2010). Motivational interviewing for smoking cessation: A meta- review. *Journal of Consulting and Clinical Psychology, 78*(6), 868–884.

Kan, M. (2007). Investigating cigarette affordability in 60 cities using the cigarette price-daily income ratio. *Tobacco Control, 16*(6) 429-432.

Karatay, G., Kublay, G., & Emiroğlu, O. N. (2010). Effect of motivational interviewing on smoking cessation in pregnant women. *Journal of Advanced Nursing, 66*(6), 1328–1337. doi: 10.1111/j.1365-2648.2010.05267.x

Kear, M. E. (2002). Psychosocial determinants of smoking among college students. *Journal of Community Health Nursing, 19*(4), 245-257.

Kenny, B. A., & Holahan, C.J. (2008). Depressive symptoms and cigarette smoking in a college sample. *Journal of American College Health, 56*(4), 409-414.

Lai, D. T. C., Cahill, K., Qin ,Y., & Tang, J.L. (2010). Motivational interviewing for smoking cessation (Review). *Cochrane Database of Systematic Reviews, 1*, Art. No.: CD006936. DOI: 10.1002/14651858.CD006936.pub2.

Marcus, S. E., Giovino, G. A., Pierce, J. P., & Harel, Y. (1993). Measuring tobacco use among adolescents. *Public Health Reports, 108*, Supp. 1, 20-24.

Markland, D. Ryan, M., Tobin, V. J., & Rollnick, S. (2005). Motivational interviewing and self-determination theory. *Journal of Social and Clinical Psychology, 24*(6), 811-831.

Martiniuk, A. L. C., Lee, C. M. Y., Lam, T. H., Huxley, R., Suh, I., Jamrozik, K., … Woodward, M. (2006). The fraction of ischaemic heart disease and stroke attributable to smoking in the WHO Western Pacific and South-East Asian regions. *Tobacco Control, 15*, 181–188. doi: 10.1136/tc.2005.013284

Martino, S., Ball, S.A., Gallon, S.L., Hall, D., Garcia, M., Ceperich, S., … & Hausotter, W. (2006). *Motivational interviewing assessment: Supervisory tools for enhancing proficiency*. Salem, OR: Northwest Frontier Addiction Technology Transfer Center, Oregon Health and Science University.

Miller, W. R., & Rollnick, S. (2010). What makes it motivational interviewing? Retrieved from http://www.motivationalinterview.org/quick_links/about_mi.html

Ministry of Health, Mongolia. (2010). *Health Indicators 2010*. Ulaanbaatar, Mongolia: State Implementing Agency of Health.

Moran, S., Wechsler, H., & Rigotti, N. A. (2004). Social smoking among US college students. *Pediatrics, 114*(4), 1028-1034.

Munkhjargal, C., & Ariunzaya, B. (2012). Rusuls (sic) of survey prevalence of chronic (sic) and prevalence and number smokers Ulaanbaatar and Altai City, Gobi-Altai. Proceedings from *The 1st International Conference "Nursing Education"*. Govi-Altai, Mongolia: Govi-Altai Branch School of the Health Sciences University of Mongolia.

Näslund, G. K. (1997). Relationships between health behavior, knowledge, and beliefs among Swedish blue-collar workers. *Scandinavian Journal of Social Medicine, 25*(2), 100-110.

National Institutes of Health. (12-7-2012). Benefits of quitting tobacco. Retrieved from http://www.nlm.nih.gov/medlineplus/ency/article/007532.htm

National Statistical Office of Mongolia. (n.d.). Хүн ам, орон сууцны 2010 оны улсын тооллогын үр дүнв. [Mongolian]. Retrieved from http://www.toollogo2010.mn/doc/Main%20results_20110615_to%20EZBH_for%20print.pdf

Niemiec, C. P., Ryan, R. M., Patrick, H., Deci, E. L., & Williams, G. C. (2010). The Energization of health-behavior change: Examining the association among autonomous self-regulation, subjective vitality, depressive symptoms, and tobacco abstinence. *Journal of Positive Psychology, 5*(2), 122-138.

Prokhorov, A. V., Yost, T., Mullin-Jones, M., de Moor, C., Ford, K. H., Marani, S…Emmons, K.M. (2008). "Look at Your Health": Outcomes associated with a computer-assisted smoking cessation counseling intervention for community college students. *Addictive Behaviors, 33*(6), 757-771.

Rollnick, S., Miller, W. R., & Butler, C. C. (2008). *Motivational interviewing in health care*. New York, NY: The Guilford Press.

Ryan, R. M., Patrick, H., Deci, E. L., & Williams, G. C. (2008). Facilitating health behavior change and its maintenance: Interventions based on self-determination theory. *The European Health Psychologist*, *10*, 2-5.

Schleicher, H. E., Harris, K. J., Catley, D., & Nazir, N. (2009). The role of depression and negative affect regulation expectancies in tobacco smoking among college students. *Journal of American College Health, 57*(5), 507-512.

Selfdeterminationtheory.org. (n.d.). Questionnaires. Retrieved from http://selfdeterminationtheory.org/questionnaires

Silva, M., Vieira, P., Coutinho, S., Minderico, C., Matos, M., Sardinha, L., & Teixeira, P. (2010). Using self-determination theory to promote physical activity and weight control: A randomized controlled trial in women. *Journal of Behavioral Medicine*, 33(2), 110-122.

Smokefree.gov. (n.d.a). Learn about topics related to quitting. Retrieved from http://www.smokefree.gov/topics.aspx

Smokefree.gov. (n.d.b). Quit guide. Retrieved from http://www.smokefree.gov/quit-guide.aspx

Soria, R., Legido, A., Escolano, C., Yeste, A. l., & Montoya, J. (2006). A randomised controlled trial of motivational interviewing for smoking cessation. *British Journal of General Practice, 56*, 768–774.

Steptoe, A., & Wardle, J., (1992). Cognitive predictors of health behavior in contrasting regions of Europe. *British Journal of Clinical Psychology, 31*, 485-502.

Steptoe, A., Wardle, J., Cui, W., Baban, A., Glass, K., Pelzer, A., … Vinck, J. (2002). An international comparison of tobacco smoking, beliefs and risk awareness in university students from 23 countries. *Addiction, 97*, 1561-1571.

Steptoe, A., Wardle, J., Cui, W., Bellisle, F., Zotti, A-M., Baranyai, R., & Sanderman, R. (2002). Trends in smoking, diet, physical exercise, and attitudes toward health in European university students from 13 countries, 1990–2000. *Preventive Medicine, 35*, 97–104. doi:10.1006/pmed.2002.1048

Thompson, B., Thompson, L. A., Hymer, J., Zbikowsi, S., Halperin, A., & Jaffe, R. (2007). A qualitative study of attitudes, beliefs and practices among 40 undergraduate smokers. *Journal of American College Health, 56*(1), 23-28.

Vansteenkiste, M., & Sheldon, K. M. (2006). There's nothing more practical than a good theory: Integrating motivational interviewing and self-determination theory. *Journal of Clinical Psychology, 45*(1), 63-82.

Vesiler, W. F., Cumming, G., Fava, J. L., Rossi, J. S., Prochaska, J. O., & Johnson, J. (2008). Theory testing using quantitative predictions of effect size. *Applied Psychology: An International Review, 54*(7), 589-608.

Wetter, D., Welsch, S., Smith, S., Fiore, M., Kenford, S., Fouladi, R., & Baker, T. (2004). Prevalence and predictors of transitions in smoking behavior among college students. *Health Psychology, 23*(2), 168-177.

Williams, G. C., McGregor, H. A., Sharp, D., Levesque, C. S., Kouides, R. W., Ryan, R. M., & Deci, E. L. (2006). Testing a self-determination theory intervention for motivating tobacco cessation: Supporting autonomy and competence in a clinical trial. *Health Psychology, 25*, 91-101.

Williams, G. C., McGregor, H. A., Zeldman, A., Freedman, Z. R., & Deci, E. L. (2004). Testing a self-determination theory process model for promoting glycemic control through diabetes self-management. *Health Psychology, 23*, 58-66.

Williams, G. C., Ryan, R. M., & Deci, E. L. (n. d.). Health-Care, Self-Determination Theory Questionnaire Packet. Retrieved from http://selfdeterminationtheory.org/edu/scales/category/6-health-care-sdt-packet#getScale

World Bank. (2013a). Data: Smoking prevalence, females (% of adults). Retrieved from http://data.worldbank.org/indicator/SH.PRV.SMOK.FE

World Bank. (2013b). Data: Smoking prevalence, males (% of adults). Retrieved from http://data.worldbank.org/indicator/SH.PRV.SMOK.MA

World Health Organization. (2013). Tobacco free initiative (TFI). Tobacco facts. Retrieved from http://who.int/tobacco/mpower/tobacco_facts/en/

Chapter 4: Summary and Conclusion

Tobacco dependence is a treatable health problem that claims the lives of 5.4 million people annually (World Health Organization [WHO], 2013). The WHO has warned that current tobacco use rates are increasing in developing nations and estimated that by 2030, 80% of tobacco-related deaths would be from these populations. In particular, the nations of Eastern Europe, the former Soviet Union, and Mongolia form a specific at risk group due to the relatively recent attempt by transnational tobacco companies at influencing their tobacco supply and use since the collapse of the Soviet Union's control over these markets (Rupert & Frankel, 1996; Sovinová and Czémy, 2000; T. Saruultuya, personal communication, 2011).

Overview of Findings

As was demonstrated in the systematic review of the literature *Smoking Habits and Influences in Eastern Europe, the Former Soviet Union and Mongolia* (Chapter 2), while descriptive data about smoking prevalence and population smoking habits were available from many post-Soviet bloc populations, English language interventional studies which could help establish best practice smoking cessation interventions for these populations were quite limited. A lack of interventional studies demonstrating culturally sensitive and effective interventions for smoking cessation deprives nurses and other health care providers of locally established evidence based treatment options in tobacco dependence care.

Chapter 3 of this document, *Evaluation of a Motivational Counseling Intervention to Impact Smoking Habits of Male Mongolian University Students*, described a smoking cessation intervention undertaken by the author with the assistance of Mongolian nursing students. The intervention used a motivational coaching intervention (MCI) to try to increase smoking cessation autonomous self-regulation (SCASR) and decrease smoking frequency and intensity among Mongolian male university students. Unfortunately, the number of participants was suboptimal for statistical analysis, making critical evaluation of the intervention's effectiveness difficult.

For those who attended counseling sessions, between baseline and final data collection episodes there were nonsignificant decreases in SCASR, smoking frequency, smoking intensity, and readiness for cessation and nonsignificant increases in hours between the last smoke and the feeling of need for another one and self-rated importance of cessation and ability for cessation. For uncounseled participants, between baseline and final data collection episodes there were nonsignificant decreases in smoking frequency, and intensity, and self-rated importance and ability for cessation. The uncounseled participants had nonsignificant increases in SCASR and hours between the last smoke and the feeling of need for another smoke. Self-rated readiness for cessation remained essentially unchanged.

The only significant difference between groups was on baseline self-rated ability for cessation, and this difference was not noted at the time of the final data collection episode. Further, the level of increase in the counseled group's self-rated cessation ability between baseline and final data collection was not significant. While study findings do not support the use of MCI for increasing SCASR and decreasing smoking frequency and

intensity, that fact that this study lacked appropriate numbers for planned statistical analysis suggests that further research with these variables would be useful before any recommendations can be presented about the use of motivational counseling in this culture.

Recommendations Based on Findings

Further research is required which can demonstrate which smoking cessation interventions, when correctly performed, can significantly decrease smoking rates in Mongolia. Research undertaken in Mongolia (and other developing nations) must be culturally acceptable to the target populations and planned with attention to feasibility within the local environment. While ultimately control trials would be best suited to establish best practice for nurse-led smoking cessation interventions, qualitative research studies could also provide information useful in refining culturally sensitive and relevant interventions for specific populations. Understanding the values, motivations, and peer pressure related to tobacco use may provide guidance to smoking cessation counselors.

While more needs to be learned to determine effective strategies for smoking cessation intervention for Mongolians, it is also important to consider how to equip nurses to effectively deliver smoking cessation interventions. The current study utilized nursing students in intervention delivery. It is unfortunate that the low participation rate in this study has made intervention evaluation sub-optimal. Rather than being seen as an indication that nursing students are incapable of delivering effective smoking cessation interventions, this should actually call attention to the need for effectively equipping future nurses during their basic education so that they are well prepared to deliver effective tobacco dependence care to their clients throughout their nursing careers.

Particularly in nations with high smoking prevalence rates, involving nursing students in actual interventions, as was done in this research, may be an effective way of equipping them for helping patients become tobacco-free throughout their professional career.

The International Council of Nurses (ICN) position statement on tobacco use and health (2012) advocated for the inclusion of tobacco information into nursing curricula and the availability of smoking cessation and tobacco control education. Data has shown that smoking cessation interventions can positively impact client behaviors. As professionals delivering critical health care worldwide, nurses have an opportunity and responsibility to reduce the numerous morbidities and mortalities caused by tobacco dependence by obtaining and using evidence-base interventions for smoking cessation. Equipped with evidence based tobacco dependence treatment interventions, nurses can empower more people to live tobacco-free.

References

International Council of Nurses. (2012). Position statement: Tobacco use and health. Retrieved from http://www.icn.ch/images/stories/documents/publications/position_statements/A18_Tobacco_Use_Health.pdf

Rupert, J., & Frankel, G. (1996, November 19). In ex-Soviet markets, U.S. brands took on role of capitalist liberator. Washington Post. Retrieved from http://www.washingtonpost.com/wp-srv/national/longterm/tobacco/stories/global3.htm

Sovinová, H., & Czémy, L. (2000). Marketing, use, and health effects of tobacco in Eastern Europe. *Journal of Substance Abuse, 5*, 185-189.

World Health Organization. (2013). Tobacco free initiative (TFI). Toabacco facts. Retrieved from http://who.int/tobacco/mpower/tobacco_facts/en/

Appendix A: Smoking Cessation Intervention Model

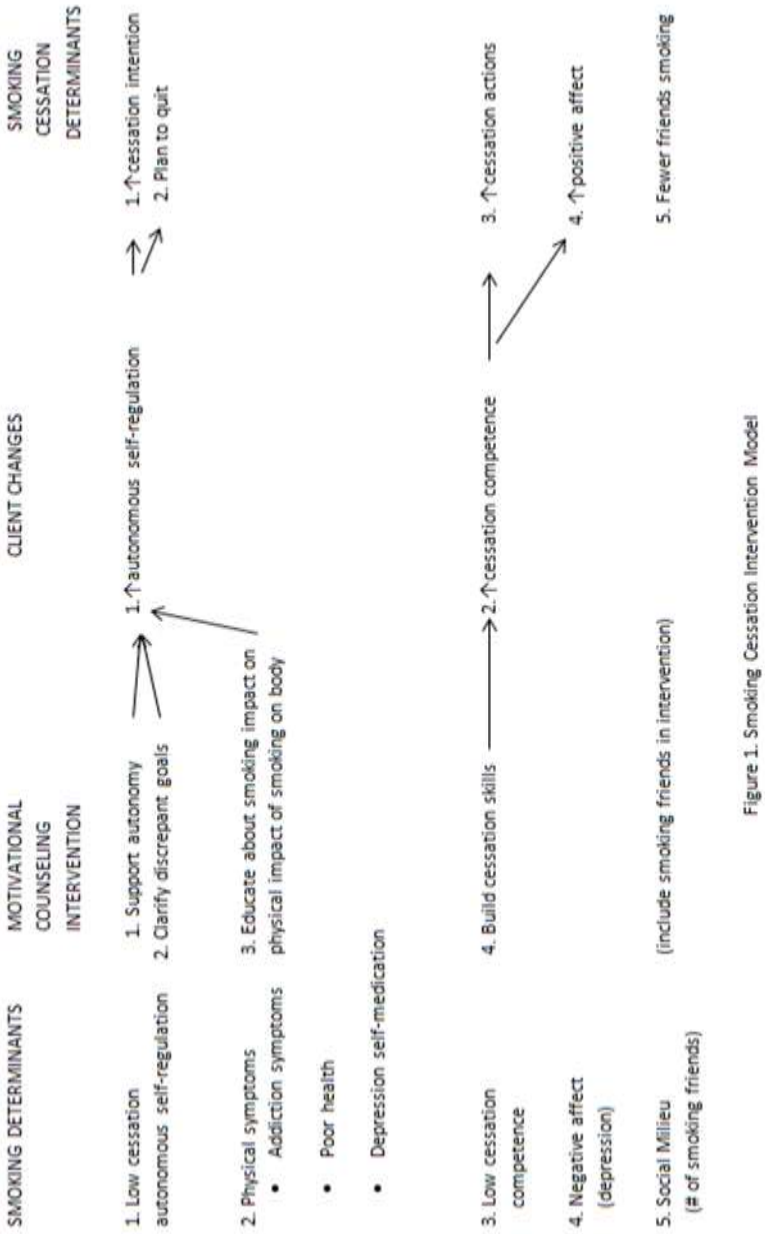


Figure 1. Smoking Cessation Intervention Model

Treatment Self-Regulation Questionnaire for Smoking

The following question relates to the reasons why you would either stop smoking or continue not smoking. Different people have different reasons for doing that, and we want to know how true each of the following reasons is for you. All 6 responses are to the same question.

Please indicate the extent to which each reason is true for you, using the following 7-point scale:

	not true			somewhat			very true
The reason I would *not smoke* is:	1	2	3	4	5	6	7
1. Because I feel that I want to take responsibility for my own health.	1	2	3	4	5	6	7
2. Because I personally believe it is the best thing for my health.	1	2	3	4	5	6	7
3. Because I have carefully thought about it and believe it is very important for many aspects of my life.	1	2	3	4	5	6	7
4. Because it is an important choice I really want to make.	1	2	3	4	5	6	7
5. Because it is consistent with my life goals.	1	2	3	4	5	6	7
6. Because it is very important for being as healthy as possible.	1	2	3	4	5	6	7

Appendix C: Questionnaire on Smoking Habits

Questionnaire on Smoking Habits

1. How many years old were you when you first smoked a whole cigarette? _____

2. Currently, on average how many days a month do you smoke? _____

3. On days you smoke, on average how many cigarettes do you smoke per day? _____

4. Which statement best describes your thoughts about quitting smoking?
   a. I want to quit smoking in the next month. ____ (1)
   b. I want to quit smoking in the next year. ____ (2)
   c. I don't want to quit smoking ever. ____ (3)
   d. I don't know. ____ (4)

5. How many times have you tried to quit smoking? _____

6. If you tried to quit smoking, what method did you use? (mark each method used)
   1. I never tried to quit ____ (1)
   2. Nicotine replacement ____ (2)
   3. Traditional Medicine ____ (3)
   4. Counseling (group or individual) ____ (4)
   5. Phone counseling ____ (5)
   6. Other ____ (6)

7. After you have smoked a cigarette, how many hours is it before you feel like you need to smoke again? ____ hours

8. On a scale of 0 - 10 (0 = "Not Important" & 10 = "Very Important"), circle the number indicating how important you think it is to stop smoking completely.

Not Important										Very Important
0	1	2	3	4	5	6	7	8	9	10

9. On a scale of 0 - 10 (0 = "Not Able" & 10 = "Very Able"), circle the number indicating how confident you are about your ability to quit smoking completely.

Not Able										Very Able
0	1	2	3	4	5	6	7	8	9	10

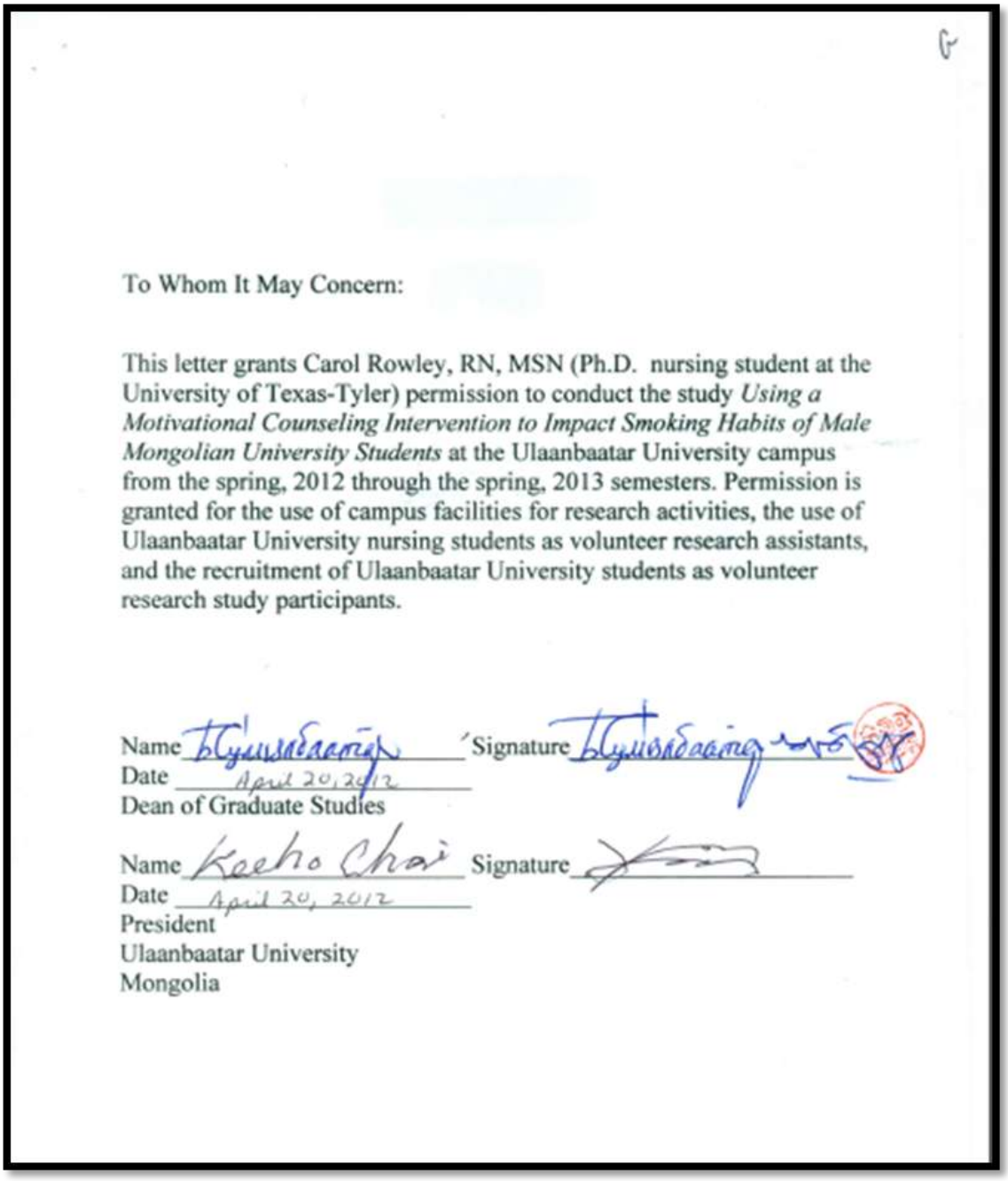
Continued on next page

10. On a scale of 0 - 10 (0 = “Not Ready” & 10 = “Very Ready”), circle the number indicating how ready you are to quit smoking completely.

Not Ready										Very Ready
0	1	2	3	4	5	6	7	8	9	10

11. In the past 3 months, have you seen or read anything that has made you think about quitting cigarettes?
    1. No ____ (1)
    2. Yes ____ (2) If yes, explain_____

Appendix D: Ulaanbaatar University Approval



To Whom It May Concern:

This letter grants Carol Rowley, RN, MSN (Ph.D. nursing student at the University of Texas-Tyler) permission to conduct the study *Using a Motivational Counseling Intervention to Impact Smoking Habits of Male Mongolian University Students* at the Ulaanbaatar University campus from the spring, 2012 through the spring, 2013 semesters. Permission is granted for the use of campus facilities for research activities, the use of Ulaanbaatar University nursing students as volunteer research assistants, and the recruitment of Ulaanbaatar University students as volunteer research study participants.

Name _____ Signature _____
Date April 20, 2012
Dean of Graduate Studies

Name Keeho Choi Signature _____
Date April 20, 2012
President
Ulaanbaatar University
Mongolia

Appendix E: UTT IRB Approval

The University of Texas at Tyler

Institutional Review Board

April 28, 2012

Dear Ms. Rowley,

Your request to conduct the study entitled: *Using a Motivational Counseling Intervention to Impact Smoking Habits of Male Mongolian University Students* is approved as an expedited study, IRB #Sp2012-81 by The University of Texas at Tyler Institutional Review Board. This approval includes the use of the written informed consent that is attached to this approval letter. **Please use this attached form for all persons, and ensure that each participant is able to repeat the purpose of the study, the voluntary nature of it, any risks involved, and who to contact other than you as the PI.** In addition, ensure that any research assistants or co-investigators have completed human protection training, and have forwarded their certificates to the IRB office (G. Duke).

Please review the UT Tyler IRB Principal Investigator Responsibilities, and acknowledge your understanding of these responsibilities and the following through return of this email to the IRB Chair within one week after receipt of this approval letter:

- This approval is for one year, as of the date of the approval letter
- Request for Continuing Review must be completed for projects extending past one year
- Prompt reporting to the UT Tyler IRB of any proposed changes to this research activity
- Prompt reporting to the UT Tyler IRB and academic department administration will be done of any unanticipated problems involving risks to subjects or others
- Suspension or termination of approval may be done if there is evidence of any serious or continuing noncompliance with Federal Regulations or any aberrations in original proposal.
- Any change in proposal procedures must be promptly reported to the IRB prior to implementing any changes except when necessary to eliminate apparent immediate hazards to the subject.

Continued next page

Best of luck in your research, and do not hesitate to contact me if you need any further assistance.

Sincerely,

Gloria Duke, PhD, RN

Chair, UT Tyler IRB

Appendix F: UTT IRB Approval (TSRQ-S Reliability Study)

The University of Texas at Tyler
Institutional Review Board

January 27, 2013

Dear Ms. Rowley,

Your request to conduct the study: *Using a Motivational Counseling Intervention to Impact Smoking Habits of Male Mongolian University Students / Mongolian Treatment Self-Regulation Questionnaire for Smoking Reliability Study,* IRB #Sp2013-45 has been approved by The University of Texas at Tyler Institutional Review Board under exempt review. This approval includes a waiver of written informed consent. In addition, please ensure that any research assistants are knowledgeable about research ethics and confidentiality, and any co-investigators have completed human protection training within the past three years, and have forwarded their certificates to the IRB office (G. Duke).

Please review the UT Tyler IRB Principal Investigator Responsibilities, and acknowledge your understanding of these responsibilities and the following through return of this email to the IRB Chair within one week after receipt of this approval letter:

- Prompt reporting to the UT Tyler IRB of any proposed changes to this research activity
- **Prompt reporting to the UT Tyler IRB and academic department administration will be done of any unanticipated problems involving risks to subjects or others**
- Suspension or termination of approval may be done if there is evidence of any serious or continuing noncompliance with Federal Regulations or any aberrations in original proposal.
- Any change in proposal procedures must be promptly reported to the IRB prior to implementing any changes except when necessary to eliminate apparent immediate hazards to the subject.

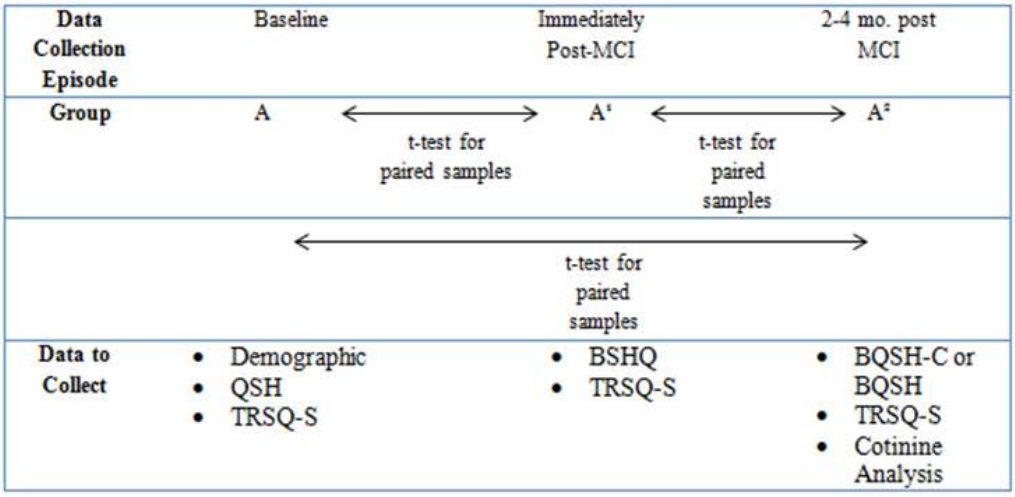
Continued next page

Best of luck in your research, and do not hesitate to contact me if you need any further assistance.

Sincerely,

Gloria Duke, PhD, RN
Chair, UT Tyler IRB

Appendix G: Data Collection Plan



MCI: motivation counseling intervention
QSM: questionnaire on smoking habits
BQSH: brief questionnaire on smoking habits
BQSH-C: brief questionnaire on smoking habits after counseling
TRSQ-S: treatment self-regulation questionnaire-smoking

Figure 2. Data Collection Plan

Appendix H: Participant Flow Sheet

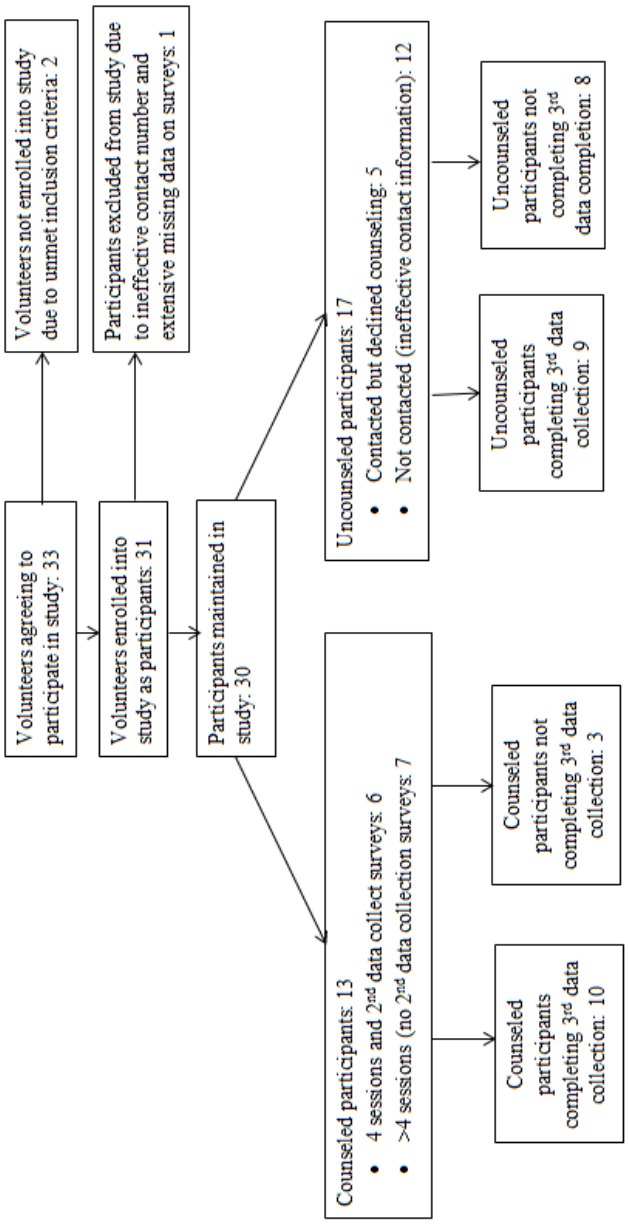


Figure 3. Participant Flow Sheet

Appendix I: Cronbach's Alpha for the Mongolian TSRQ-S

Table 1

Cronbach's Alpha for the Mongolian TSRQ-S

Gender	Cronbach's Alpha	N of Items
Male and Female	.865	6
Male	.919	6
Female	.781	6

Appendix J: Brief Questionnaire on Smoking Habits

Brief Questionnaire on Smoking Habits

1. Currently, on average, how many days a month do you smoke? _____

2. On days you smoke, on average, how many cigarettes do you smoke per day? _____

3. Which statement best describes your thoughts about quitting smoking?
   a. I want to quit smoking in the next month. ____ (1)
   b. I want to quit smoking in the next year. ____ (2)
   c. I don't want to quit smoking ever. ____ (3)
   d. I don't know. ____ (4)

4. After you have smoked a cigarette, how many hours is it before you feel like you need to smoke again? ____ hours

5. On a scale of 0 - 10 (0 = "Not Important" & 10 = "Very Important"), circle the number indicating how important you think it is to stop smoking completely.

Not Important										Very Important
0	1	2	3	4	5	6	7	8	9	10

6. On a scale of 0 - 10 (0 = "Not Able" & 10 = "Very Able"), circle the number indicating how confident you are about your ability to quit smoking completely.

Not Able										Very Able
0	1	2	3	4	5	6	7	8	9	10

7. On a scale of 0 - 10 (0 = "Not Ready" & 10 = "Very Ready"), circle the number indicating how ready you are to quit smoking completely.

Not Ready										Very Ready
0	1	2	3	4	5	6	7	8	9	10

Appendix K: Brief Questionnaire on Smoking Habits after Counseling:

Brief Questionnaire on Smoking Habits after Counseling

1. Currently, on average, how many days a month do you smoke? _____

2. On days you smoke, on average, how many cigarettes do you smoke per day? _____

3. Which statement best describes your thoughts about quitting smoking?
   a. I want to quit smoking in the next month. ____ (1)
   b. I want to quit smoking in the next year. ____ (2)
   c. I don't want to quit smoking ever. ____ (3)
   d. I don't know. ____ (4)
4. After you have smoked a cigarette, how many hours is it before you feel like you need to smoke again? ____ hours

5. On a scale of 0 - 10 (0 = "Not Important" & 10 = "Very Important"), circle the number indicating how important you think it is to stop smoking completely.

   Not Important Very Important

   0 1 2 3 4 5 6 7 8 9 10

6. On a scale of 0 - 10 (0 = "Not Able" & 10 = "Very Able"), circle the number indicating how confident you are about your ability to quit smoking completely.

   Not Able Very Able

   0 1 2 3 4 5 6 7 8 9 10

7. On a scale of 0 - 10 (0 = "Not Ready" & 10 = "Very Ready"), circle the number indicating how ready you are to quit smoking completely.

   Not Ready Very Ready

   0 1 2 3 4 5 6 7 8 9 10

8. In your experience, what is the biggest challenge to quit smoking?
   _____
   _____
   _____
   _____

Appendix L: Demographic Questionnaire

Personal Information

Please respond to the following questions by placing a number or an X on the blank by your answer for each question. There are no right or wrong answers. Please respond as accurately as possible.

1. My age is ____ years old.

2. My ethnicity is:
   a. Durvud ___ (1)
   b. Khalkha ___ (2)
   c. Khazakh ___ (3)
   d. Other ___ (4)

3. My academic year is:
   a. 1st year ___ (1)
   b. 2nd year ___ (2)
   c. 3rd year ___ (3)
   d. 4th year ___ (4)
   e. Graduate ___ (5)
   f. Other ___ (9)

4. My major area of study is:
   a. Agriculture ___ (1)
   b. Business Administration ___ (2)
   c. Computer ___ (3)
   d. Economics ___ (4)
   e. English Language ___ (5)
   f. Korean Language ___ (6)
   g. Korean Studies ___ (7)
   h. Law ___ (8)
   i. Mongolian Studies ___ (9)
   j. Nursing ___ (10)
   k. Other ___ (11)

5. Before beginning studies at the university I lived in:
   a. Darkhan ___ (1)
   b. Erdenet ___ (2)
   c. Ulaanbaatar ___ (3)
   d. Countryside ___ (4)
   e. Other ___ (5)

Appendix M: Research Assistant Training and Performance Record

Table 2

Research Assistant Training and Performance Record

RA	MI training hours	MI adherence score: consistent/ inconsistent items	MI competence score: consistent/ inconsistent items	Number of students counseled
1	14h 35 min	4.4 / 3.4	4.5/4.6	3
2	19h 35 min	6.1 / 2.8	4.7 / 4.8	2
3	20h 50 min	6.2 / 1.8	6.2 / 4.8	2
4	17h 45 min	4.2 / 1.2	4.2 / 7	1
5	15h 15 min	5.7 / 2	5.9 / 6.2	3
6	11h 30 min	4.3/ 1.2	5.1 / 6.3	1
7	16 h 35 min	4.5 / 1.8	5.3 / 6	1

Appendix N: Motivational Interview Rating Worksheet

MOTIVATIONAL INTERVIEW RATING WORKSHEET

RATING ITEM	ADHERENCE: FREQUENCY & EXTENSIVENESS	COMPETENCE: SKILL LEVEL COMMENTS
1. MI Style or Spirit (p.105)		
2. Open-ended Questions (p. 106)		
3. Affirmation of Strengths & Self-efficacy (p. 107)		
4. Reflective Statements (p. 108)		
5. Fostering a Collaborative Relationship (p. 109)		
6. Motivation to Change (p. 110)		
7. Developing Discrepancies (p. 111)		
8. Pros, Cons, and Ambivalence (p.112)		
9. Change Planning Discussion (p. 113)		
10. Client-centered Problem Discussion and Feedback (p. 114)		

Figure 4a. Motivational Interview Rating Worksheet 1 (Martino et al., 2006)

Continued on next page

RATING ITEM	ADHERENCE: FREQUENCY & EXTENSIVENESS	COMPETENCE: SKILL LEVEL COMMENTS
1. Unsolicited Advice, Direction Giving & Feedback (p.115)		
2. Emphasis on Abstinence (p.116)		
3. Direct Confrontation of Client (p.117)		
4. Powerlessness and Loss of Control (p.119)		
5. Asserting Authority (p.120)		
6. Closed-ended Questions (p.121)		

ALWAYS CONSULT RATING GUIDE WHEN TRANSFERRING FROM WORKSHEET TO RATING FORM, ESPECIALLY WHEN UNCERTAIN.

ADHERENCE RATINGS:
FREQUENCY AND EXTENSIVENESS

BEHAVIOR OCCURRED	RATING
Never occurred =	*Not at all (1)*
Once but not in depth =	*A little (2)*
Twice, but not in depth =	*Infrequent (3)*
3 – 4 times or once in some depth =	*Somewhat (4)*
5 – 6 times or more than once and once in depth =	*Quite a bit (5)*
More than 6 times or several times in depth =	*Considerably (6)*
Dominated session =	*Extensively (7)*

COMPETENCE RATINGS:
SKILL LEVEL

BEHAVIOR	RATING
Unacceptable, unprofessional =	*Very poor* (1)
Lack of expertise; competence =	*Poor* (2)
Fair; below average =	*Acceptable* (3)
Average =	*Adequate* (4)
Above average =	*Good* (5)
Skill and expertise shown =	*Very good* (6)
High level of mastery =	*Excellent* (7)

Figure 4b. Motivational Interview Rating Worksheet 2 (Martino et al., 2006)

Continued on next page

MOTIVATIONAL INTERVIEWING
ADHERENCE AND COMPETENCE FEEDBACK FORM

	MI Consistent Items	Adherence Rating*								Competence Rating**							
		1	2	3	4	5	6	7		NA	1	2	3	4	5	6	7
1	MI Style or Spirit																
2	Open-ended Questions																
3	Affirmations of Strengths & Self-efficacy																
4	Reflective Statements																
5	Fostering Collaboration																
6	Motivation to Change																
7	Developing Discrepancies																
8	Pros, Cons and Ambivalence																
9	Change Planning Discussion																
10	Client-centered Problem Discussion and Feedback																
	MI Inconsistent Items																
11	Unsolicited Advice, Directions & Feedback																
12	Emphasize Abstinence																
13	Direct Confrontation																
14	Powerlessness, Loss of Control																
15	Asserting Authority																
16	Closed-ended Questions																

*ADHERENCE: 1 – Not at all 2 – A little 3 – Infrequent 4 – Somewhat 5 – Quite a bit 6- Considerably 7 – Extensively
** COMPETENCE: 1 – Very poor 2- Poor 3 – Acceptable 4 – Adequate 5 – Good 6 – Very Good 7 - Excellent

Figure 4c. Motivational Interview Rating Worksheet 3 (Martino et al., 2006)

Appendix O: Sample Characteristics

Table 3

Sample Characteristics

Demographic Characteristic		Counseled Group (*n*=13)	Uncounseled Group (*n*=17)
Academic Year	Freshmen	5	6
	Sophomores	4	4
	Juniors	1	3
	Seniors	1	4
	Graduates	2	0
Academic Major	Agriculture	0	3
	Business	0	1
	Computer	6	5
	Economics	1	4
	Korean Language	0	1
	Korean Studies	1	0
	Law	4	1
	Mongolian	0	1
	Other	1	1
Prior Residence	Darkhan	0	1
	Erdenet	1	0
	Ulaanbaatar	9	9
	Countryside	2	2
	Other	1	5
Think About Quitting	Month	4	10
	Year	2	1
	Never	1	0
	No idea	6	6

Appendix P: Baseline SCASR and Smoking Habits

Table 4

Baseline SCASR and Smoking Habits

Group Statistics

	MCI participation	N	Mean	Std. Deviation	Std. Error Mean
SCASR1	MCI	13	5.9462	1.48190	.41100
	No MCI	17	5.8529	1.03930	.25207
Days per month1	MCI	8	27.000	8.8962	3.1453
	No MCI	12	30.000	.7385	.2132
Smokes per day1	MCI	12	7.208	4.3352	1.2515
	No MCI	15	8.933	7.5826	1.9578
Times to quit1	MCI	13	2.08	3.040	.843
	No MCI	17	3.06	3.579	.868
Hours between smokes1	MCI	9	1.611	.8580	.2860
	No MCI	16	1.354	.7929	.1982
How important1	MCI	13	8.23	2.619	.726
	No MCI	17	9.18	1.510	.366
How able1	MCI	13	5.62*	3.355	.931
	No MCI	17	8.00	2.398	.582
How ready1	MCI	13	6.08	3.303	.916
	No MCI	17	7.12	2.288	.555

* $p < .05$ two-tailed

Appendix Q: Self-Rated Ability Group Differences at Baseline

Table 5

Self-Rated Ability Group Differences at Baseline

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
How able1	Equal variances assumed	.256	.617	-2.273	28	.031	-2.385	1.049	-4.534	-.235
	Equal variances not assumed			-2.173	20.823	.041	-2.385	1.097	-4.668	-.101

Appendix R: Counseled Participants' SCASR and Smoking Habits Results

Table 6

Counseled Participants' SCASR and Smoking Habits Results

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	SCASR1	5.2333	6	1.95312	.79736
	SCASR2	5.8667	6	.77632	.31693
Pair 2	SCASR2	6.0000	5	.78740	.35214
	SCASR3	5.8000	5	.86313	.38601
Pair 3	SCASR1	6.3800	10	.68280	.21592
	SCASR3	6.1500	10	.75166	.23770
Pair 4	Days per month1	30.200	5	.4472	.2000
	Days per month2	24.2000	5	13.53514	6.05310
Pair 5	Days per month2	24.2000	5	13.53514	6.05310
	Days per month3	21.7000	5	12.07063	5.39815
Pair 6	Days per month1	26.429	7	9.4491	3.5714
	Days per month3	18.7857	7	11.45956	4.33131
Pair 7	Smokes per day1	5.300	5	1.8235	.8155
	Smokes per day2	6.3000	5	5.84808	2.61534
Pair 8	Smokes per day2	4.9000	5	3.68103	1.64621
	Smokes per day 3	3.6000	5	3.69797	1.65378
Pair 9	Smokes per day1	5.813	8	1.7716	.6263
	Smokes per day 3	4.3750	8	2.78709	.98538

Appendix S: Uncounseled Participants' SCASR, Smoking Habits, and Cessation Indicator Results

Table 7

Uncounseled Participants' SCASR, Smoking Habits, and Cessation Indicator Results

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	SCASR1	6.2556	9	.53177	.17726
	SCASR3	6.4222	9	.56075	.18692
Pair 2	Days per month1	29.714	7	.7559	.2857
	Days per month3	25.8571	7	6.20292	2.34448
Pair 3	Smokes per day1	6.125	8	3.3568	1.1868
	Smokes per day 3	5.2500	8	3.73210	1.31950
Pair 4	Hours between smokes1	1.310	7	.8676	.3279
	Hours between smokes3	2.6729	7	2.09304	.79110
Pair 5	How important1	9.33	9	1.118	.373
	How important3	8.7778	9	1.30171	.43390
Pair 6	How able1	7.67	9	2.550	.850
	How able3	7.0000	9	2.64575	.88192
Pair 7	How ready1	6.78	9	2.224	.741
	How ready3	6.7778	9	2.33333	.77778

Appendix T: Counseled Participants' Cessation Indicator Results

Table 8

Counseled Participants' Cessation Indicator Results

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Hours between smokes1	1.700	5	.8367	.3742
	Hours between smokes2	2.2600	5	1.11265	.49759
Pair 2	Hours between smokes2	2.7667	3	1.12398	.64893
	Hours between smokes3	3.0000	3	2.64575	1.52753
Pair 3	Hours between smokes1	1.917	6	.9174	.3745
	Hours between smokes3	5.9300	6	9.05922	3.69841
Pair 4	How important1	7.50	6	3.017	1.232
	How important2	7.5000	6	2.16795	.88506
Pair 5	How important2	8.0000	5	2.00000	.89443
	How important3	8.6000	5	1.51658	.67823
Pair 6	How important1	8.60	10	2.366	.748
	How important3	9.2000	10	1.22927	.38873
Pair 7	How able1	6.33	6	3.830	1.563
	How able2	8.1667	6	2.22860	.90982
Pair 8	How able2	8.8000	5	1.78885	.80000
	How able3	7.4000	5	2.07364	.92736
Pair 9	How able1	6.70	10	2.584	.817
	How able3	7.3000	10	1.63639	.51747
Pair 10	How ready1	6.50	6	3.332	1.360
	How ready2	8.0000	6	2.44949	1.00000
Pair 11	How ready2	8.6000	5	2.19089	.97980
	How ready3	6.6000	5	1.51658	.67823
Pair 12	How ready1	7.10	10	2.726	.862
	How ready3	6.8000	10	1.93218	.61101

Appendix U: Final Data on SCASR, Smoking Habits, and Cessation Indicators

Table 9

Final Data on SCASR, Smoking Habits, and Cessation Indicators

Group Statistics

	MI participation	N	Mean	Std. Deviation	Std. Error Mean
SCASR3	MCI	10	6.1500	.75166	.23770
	No MCI	9	6.4222	.56075	.18692
Days per month3	MCI	10	22.3500	10.97991	3.47215
	No MCI	9	23.4444	10.39364	3.46455
Smokes per day 3	MCI	9	4.0556	2.77764	.92588
	No MCI	8	5.2500	3.73210	1.31950
Hours between smokes3	MCI	7	5.3686	8.40224	3.17575
	No MCI	8	2.3800	2.10740	.74508
How important3	MCI	10	9.2000	1.22927	.38873
	No MCI	9	8.7778	1.30171	.43390
How able3	MCI	10	7.3000	1.63639	.51747
	No MCI	9	7.0000	2.64575	.88192
How ready3	MCI	10	6.8000	1.93218	.61101
	No MCI	9	6.7778	2.33333	.77778

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED TWO PAGES.**

NAME	POSITION TITLE
Carol M. Rowley	Nursing Instructor Ulaanbaatar University Ulaanbaatar, Mongolia
eRA COMMONS USER NAME	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Deaconess Hospital School of Nursing St. Louis, MO	Diploma	1983	Nursing
Augsburg College – Minneapolis, MN	BSN	1985	Nursing
University of Texas at Austin – Austin, TX	MSN	1997	Nursing – FNP
University of Texas at Tyler – Tyler, TX	PhD	2013	Nursing - PhD

NOTE: The Biographical Sketch may not exceed two pages:

A. Positions:

Nursing Instructor — 2009 - present
Ulaanbaatar University
Ulaanbaatar, Mongolia

Nursing Instructor — 2006 - 2009
Yanbian University of Science and Technology
Yanji, China

Nurse Practitioner — 1997 - 2006
Internal Medicine
Shannon Clinic
San Angelo, TX

B. LICENSURE/CERTIFICATION

Current - Texas State Board of Nurse Examiners

C. Honors/Professional Memberships:

2013 Highest ranked foreign professor for student evaluation scores, Fall, 2012, Ulaanbaatar University

2012 - current: Sigma Theta Tau, Iotta Nu Chapter