---
title: `Research on impact of smoking, lack of exercising, weight on medical cost
author: Linwei Yao, 1003849384
date: December 20th 2020
output: pdf
fontfamily: Times New Roman
font size: 12pt
# spacing: double spacing
Code and data supporting this analysis is available at: https://github.com/yaolinwe/Final-paper.git
keywords: smoking, exercise, weight, medical
abstract: This research outlines the impacts of smoking on people's health, level of exercises on one's health and als o the weight on patient's medical cost. Smoking has been a vital problem though various measures have been taken t o curb smoking and use of tobacco related products. On the other hand, the level of exercises on someone's health is pivotal as it also determines one's weight. Lack of proper body exercises can have grave impacts on an individual's weight. We will seek to identify the level of exercises and the effects of not exercising on a patient's health.
body: Introduction
The top global causes of illnesses in the world are associated with respiratory and noncommunicable diseases. Accor ding to World Health Organization, 7 of the leading causes of deaths in 2019 were noncommunicable diseases. Deat hs from infections happening on the trachea, bronchus and lung cancers rose from 1.2 million to 1.8 million in 2019 (WHO). However, some of the major causes of such illnesses are lifestyle habits and other substance use. (Milic et a l) outlines that some reasons for major illnesses include poor lifestyle habits such as smoking, using drugs inappropr iately, poor weight maintenance, lack of exercise or enough exercises, poor diet, lack of sleep among many others. Most smokers die at really a young age. They tend to think its normal and ignore the underlying issues outlined abou t the effects of smoking (Milic et. al). (Warner 540) states that young people take less efforts to change their lifestyle s hence they get affected easily respiratory diseases. On the other hand, lack of exercises has brought up many effect s of individual's health and it has become as deadly as smoking. A study on weight loss and its related impacts show ed that people across the world are now dying due to lack of proper body exercises (XMR Modest Weight Loss 401) . This has been brought about by the improvement of technology hence some people rarely do find enough time for doing normal exercises like walking.
Lack of exercises lead to diseases that are physical inactivity related. These diseases include, high blood pressure, he art and heart related diseases, obesity, stroke, abnormal blood cholesterol levels, depression, breast and colon cancer etc. There are high chances that all these diseases may lead to death and if not, they will be chronic and eventually le ad to death.
Regular exercises aid in controlling an individual's weight, reducing the rate at which they get ill, improving their m ental health, improving one's mood, increasing the chances of living longer, improving one's ability to do daily acti vities, etc. ( Z. Huang et al 85). There is a link between the weight of a human being and the rate at which they will get ill. This study helps in unraveling some of those relationships so individuals can get as healthy as possible and c urb the rate of having such chronic related illnesses.
Aims of the study
1. To study if there is a link between smokers and their respective weights.
2. To study the effect of smoking and lack of exercises on the health conditions of patients.
3. To discover the connection between weight, smoking, level of exercises on the medical cost of patients.
4. To study the relationship between weight and health care cost of patients.
Significance of the study
The most pivotal significance of this study is to discover the effect of smoking, exercises, and weight on medical cos t of patients in United States. Once we come up with the hypothesis we will provide our recommendation based on well researched data. The study will also depict the relationship between smoking, the patient's weight, the level of e xercises and the total medical cost. This study will aid all smokers and all those who rarely do exercises.
Scope of the study
We will be researching on the effect of smoking, not exercising and weight on the total medical cost used in health c enters specifically Toronto General Hospital which will be our case study.
Limitations of the study
1. A lot of time was spent as the research team could not do a research on all the patients.
2. The team lack adequate finances in printing more questionnaires to reach a wider audience such as more patients

and the medical providers. They also lacked sufficient funds to interview all the patients and the medical providers.

Research questions

1. Is smoking dangerous to one's health?
2. Is there a connection between poor exercising and poor health conditions?
3. Is there a link between smoking and poor health conditions?
4. Does smoking and lack of enough exercises affect the weight of someone?
5. Ways in which smokers can quit smoking.

Research Hypothesis

- Hypothesis 1
- There is no link between smoking and increased rates of medical cost on patients with respiratory related complications.
- There is a link between smoking and high health cost on patients with respiratory related complications.
- Hypothesis 2
- There is no connection between inadequate exercises and high medical cost on patients.
- There is connection between inadequate exercises and high medical cost on patients.
- Hypothesis 3
- There is no connection between smoking, lack of exercises, weight and medical cost of patients.
- There is a relationship between smoking, lack of exercises, weight and the medical cost on patients.

DATA SECTION

Method of Collecting Data

Participants

The participants included 100 patients at the Toronto General Hospital where 60 were female and 40 male. They were put in groups of 5 i.e. 10 groups to make the study easier and cheaper. Each group catered for different hypothesis as it saved time. 10 participants were excluded as they had hospital-based phobias others were already suffering from major respiratory disorders.

Materials

Questionnaires, notes, pens

Methods used

1. Prospective observational
2. Administering questionnaires
3. Interviewing
4. Viewing documents and records
5. Surveying

Procedure

The team members started with a meeting. They were each allocated to their groups and given the required materials. The instructions were written on a sheet and each student was given a sheet. The instructions were read loud and the ununderstandable points were explained. The participants were given the rules to be followed during the interview. Two days after the initial meeting, participants were informed of their group assignment and its condition and reminded that, if they were in a food-deprived group, they should not eat anything after 10 a.m. the next day. Participants from the control group were tested at 7:30 p.m. in a designated computer lab on the day the deprivation started. Those in the 12-hour group were tested at 10 p.m. on that same day. Those in the 24-hour group were tested at 10:40 a.m. on the following day.

The team that were to interview the patients gave them the available questionnaires. The medical providers were interviewed by different team members. Some of the team members went through the clinical records. The other team members observed the handling of patients as they were being treated asking the medical practitioners questions. In addition, they were told that they would have an unlimited amount of time to complete the task, and they were not to tell any other participant whether they had completed the questionnaire or they had simply given up. This procedure was followed to prevent the group influence of some participants seeing others give up. Any participant still working on the questionnaire after 40 minutes was stopped so that we could keep the time of the study manageable. Immediately after each participant stopped working on the questionnaire, he/she gave demographic information and completed a few manipulation-check items.

Model

To illustrate the complexity of the dataset, Figure 1a displays the smoking patterns of 4 individuals within the Toronto General Hospital study. The follow-up visit numbers are shown on the x-axis and therefore the individuals' IDs ar

e on the y-axis. Within the interval between two consecutive visits (i.e., 4 months), the individuals either smoked (in dicated by a shaded area) or didn't smoke (indicated by an unshaded area). Some individuals experienced smoking a nd nonsmoking periods in an alternating fashion (e.g., individuals 2, 3, and 4), while others never made quit attempt s (e.g., individual 1). Although the smoking patterns are unknown after censoring, the long trailing nonsmoking inter vals of some individuals (e.g., individuals 2 and 3) suggest the existence of a possible "cured" subpopulation (i.e., in dividuals who successfully quit smoking). These sorts of data arise frequently in medical studies like infectious dise ases (e.g., ear infection, bacteria carriage, Hib infection, chronic diseases (e.g., epilepsy, soft tissue sarcoma, and sub stance addiction. Altogether, all these cases patients make transitions among several disease states or between the pr esence and absence of symptoms. After the administration of treatments, some patients are cured and they do not ex perience disease states or symptoms.

Results

The team that was dealing with patients found out that most of the patients who had respiratory related diseases were either smokers or former smokers. 50% of individuals who were former smokers had cancer-related issues such as l ung cancer. They also found out that most people who had heart-related problems rarely did regular exercises. Those individuals who did not do regular exercises had weight-related ailments such as obesity and high blood pressure. It was also identified that to treat respiratory-related illnesses, weight-related illnesses especially through medication a nd body exercising schedules came at a higher cost. Each team members compared their answers and came up with one clean answer sheet.

The information gathered was recorded and the team members came up with tables to support their evidences. The t ables are as shown below:

Table showing the relationship between smoking and medical cost

| | Medical costs ($) | | |
|---|---|---|---|
| Mortality (HR) (95% CI) | Never smokers (A) | Smokers (B) | Ratio (B/A) |
| Adjusted for confounding factors. | | | |
| Per capita per month costs adjusted for Medical Outcome Study scores. | | | |
| Males | | | |
| All ages | 1.47 (1.18–1.83) | 153 | 170 1.11 |
| 40–49 | 1.16 (0.44–3.05) | 95 | 81 0.85 |
| 50–59 | 1.69 (0.86–3.31) | 119 | 129 1.08 |
| 60–69 | 1.98 (1.31–3.00) | 158 | 200 1.27 |
| 70–79 | 1.21 (0.90, 1.62) | 263 | 267 1.02 |

Table showing the relationship between lack of exercises and medical costs in TGH

| | People who rarely exercise | People who exercise |
|---|---|---|
| People diagnosed of coronary diseases | 133 | 12 |
| People diagnosed of other immune illnesses | 156 | 2 |

Discussion

There are several behavioral risk factors in human beings. These factors include: smoking, lack of enough body exer cises and obesity. They lead to chronic health conditions such as blood pressure, lung cancers and other chronic illne sses. Smoking, lack of exercises and not watching over weight leads to chronic illnesses. Our study identified that th e patients drive into healthcare spending a lot of money on medical costs. If they lack to take the medications they le ad to disability cases or death. The study also shows that there is a relationship between smoking and the increased medical cost of patients. This is because most cigarette smokers one way or another eventually gets sick (Sturm et al 229). Smoking cigarettes on a daily basis leads to respiratory related diseases hence increasing more medical cost o n patients.

Our study also shows that by not getting enough physical activity i.e. lack of enough exercises leads to heart-related problems such as high blood pressure. Hence it is true that lack of enough exercises increases medical cost on patien ts. Lack of enough exercises leads to diseases such as heart disease, diabetes and cancer. Not getting enough physic

al activity can cause heart disease even for people that have no any other risk factors. It also can increase the likeliho od of developing other heart condition risk factors, including obesity, high vital sign, high blood cholesterol, and sor t 2 diabetes. This in return increases the medical cost on patients.

Kemper et al (197) shows that 1 in 4 Canadian adults and 1 out of 5 high school students get the required amount of physical exercises which is alarming. Lack of recommended exercises also lead to type 2 diabetes. Physical activity helps control blood sugar (glucose), weight, and blood pressure and helps raise “good” cholesterol and lower “bad” cholesterol. Adequate physical activity also can help reduce the danger of heart condition and nerve damage, which are often problems for people with diabetes.

Conclusion

Not only that lack of recommended physical activity leads to cardiac related problems and diabetes but also leads to different types of cancers including cancer of the stomach, lung, kidney, esophagus, uterus, colon, breast and bladde r. This obviously leads to high medical cost on patients as they are chronic and expensive to treat worldwide. Study also shows that there is a connection between smoking, lack of exercises, weight and medical cost on patients. All th ese three are connected as they all lead to diseases and if still not taken to heed they lad to chronic diseases. These h ence increase the number of patients and also the cost per patient. Every human being should strive to achieve a heal thy life. Smokers should start managing their smoking habits or reduce the rate at which they smoke until they comp letely stop. People should also be fond of exercising to reduce obesity and heart related diseases. Ignorant people ma y end up dying at young ages due to diseases.

References

Milic, Marija, et al. "Tobacco smoking and health-related quality of life among university students: Mediating effect of depression." Plos one 15.1 (2020): e0227042.

P. Kemper et al., “The Design of the Community Tracking Study: A Longitudinal Study of Health System Change a nd Its Effects on People,” Inquiry 33 , no. 2 ( 1996 ): 195 –206.

R. Sturm et al., “The Design of Health Care for Communities: A Study of Health Care Delivery for Alcohol, Drug A buse, and Mental Health Conditions,” Inquiry 36 , no. 2 ( 1999 ): 221 –233

Tuomilehto, Jaakko, et al. "Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impair ed glucose tolerance." New England Journal of Medicine 344.18 (2001): 1343-1350.

Warner, Kenneth E. "Cost effectiveness of smoking-cessation therapies." Pharmacoeconomics 11.6 (1997): 538-549 .

World Health Organization, “The Alcohol Use Disorders Identification Test (AUDIT): Guidelines for Use in Primar y Health Care” (Geneva: WHO, 1992).

W.C. Willett et al., ”Weight, Weight Change, and Coronary Heart Disease in Women,” Journal of the American Me dical Association 273 , no. 6 ( 1995 )

XMR Modest Weight Loss,” International Journal of Obesity and Related Metabolic Disorders 16 , no. 6 ( 1992 ): 3 97 –415. Crossref, Medline, Google Scholar

Z. Huang et al., “Body Weight, Weight Change, and Risk for Hypertension in Women,” Annals of Internal Medicin e 128 , no. 2 ( 1998 ): 81 –88