Awareness on the Harmful Effects of E-Cigarette Smoking "Basis for Health Education"

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Abstract:- Electronic cigarettes are becoming recognized as one of today's teen habits. They use E-cigarettes as an alternative to smoking cigarettes or tobacco. Teenagers believe that smoking helps relieve tension from a long day of work as a part of their way of life. The purpose of this study was to determine and assess the awareness on the harmful effects of E-cigarette smoking among the users in 4 barangays in Echague, Isabela. The study used a quantitative design and used snowball sampling type of research design to determine the respondent's awareness on the harmful effects of E-cigarettes. Demographic data and 4point Likert-scale type items were used to gather needed information. Data was collected by online surveys using Google Forms and face-to-face surveys utilizing printed questionnaires and were analyzed using Pearson correlation. The findings indicated that the majority of respondents were males, their length of use is 2 years. Most of them are 21 years old and are undergraduate. The findings show that the respondents are slightly aware of the harmful effects of using E-cigarette. Concerning to their physical health that can cause a lot of diseases such as cancer, pulmonary diseases, brain damage, cardiovascular disease, and sexual and reproductive dysfunction. It can be inferred that respondents are slightly aware of how using E-cigarettes has influenced their everyday activities and finances. In terms of their social lives, this study also reveals that the participants are only slightly aware that using e-cigarettes can cause harm to others.

I. INTRODUCTION

A. Background

Electronic cigarette is considered as one of the habits of teenagers nowadays. It is a part of lifestyle of the people which teenagers believe that smoking can help to release stress in all day work. Many users of E- cigarette are teenagers. They use E-cigarette for alternative use of smoking of tobacco of cigarette.

According to Global Tobacco Survey (GATS) (2015), 2. 8 percent is the over-all recorded users of electronic cigarette in the Philippines. Given the rapidly expanding global market for this new class of devices, the local consumers of E-cigarettes are likely to have also increased.

E-cigarettes are devices that operate by heating a liquid solution to a high enough temperature so th at it produces an aerosol that is inhaled (E-cigarettes: Facts, Stats, and Regulation, 2021). E-cigarettes first entered the market in 2007 and have evolved many times since then, with older versions designed to resemble regular cigarettes, cigars, pipes, pens, and even USB flash drives.

Metro Manila, November 15 (CNN Philippines) On Friday, the Department of Health (DOH) verified the country's first instance of electronic cigarette or vaping-associated lung injury (EVALI). The instance, which was reported in Visayas, included a 16-year-old girl who had been smoking e-cigarettes for six months, according to the Health Department. Officials stated that the patient had been using the substance "concurrently with cigarettes," a practice known as "dual usage" by the Department of Health. The patient, who was hospitalized on October 21, first appeared with sudden-onset acute shortness of breath, necessitating oxygen supplementation and ICU admission, according to the department's statement. As today, EVALI is a recognized condition associated with the use of vapes causing direct lung injuries.

The Philippines' president issued an executive order (EO) on February 26, 2020, restricting the marketing and usage of electronic cigarettes. In its preamble, according to the World Health Organization (WHO) published a report in 2016 stating that Electronic Nicotine and Non-Nicotine Delivery Systems (ENDS/ENNDS) emit aerosol that commonly contains toxic substances that, over time, may increase the ris k of a variety of health problems for users, including chronic obstructive pulmonary disease, lung cancer, and cardiovascular disease.

Bystanders exposed to ENDS/ENNDS and heated tobacco products (HTPs) have comparable risks of respiratory sickness, cardiovascular disease, cancer, neurotoxicity, brain development retardation, and sexual and reproductive dysfunctions, according to the Philippine Department of Health. The EO declares that access to and use of ENDS/ENNDS, HTPs, and other new tobacco products must be regulated in order to "address the significant danger to public health, prevent the initiation of nonsmokers and the youth, and limit health hazards to both users and third parties exposed to emissions." (Guerra et al., 2020.)

The usage of E-cigarettes, often known as vaping, is a relatively new and heavily marketed method of reducing cigarette smoking. This has grown in popularity, particularly among adults. However, it is possible that its use will have hazardous consequences, similar to cigarette s moking. Electronic cigarette use has been linked to health hazards due to the presence of a number of potentially harmful compounds that can have a direct impact on

people's health, according to studies. Electronic cigarette usage among teenagers has been linked to an increased risk of cardiovascular, neurological, and respiratory disorders, according to research. (Fajad et al., 2021).

Researchers conducted the study in Echague Isabela specifically in four barangays San Fabian, Buneg, Silauan and Cabugao. Because this is where the vape (E-cigarette) shop located and most of the users of E- cigarette.

B. Purpose

This study is intended to assess the awareness of the respondents on the harmful Effects of E-cigarette, Smoking: "Basis for the Development of smoking cessation Infographics in Echague, Isabela, Philippines.

Specifically, the researchers seek to find answer to the following questions:
- What is the demographic profile of the respondents in terms of age, sex, educational attainment, age started using E-cigarette, and length of using E-cigarette?
- What is the level of awareness on the harmful Effects of E-cigarettes among respondent?
- Is there significant relationships between the respondent's profiles and their awareness of the harmful effects of E-cigarette?

II. METHODS

A. Research Design

The study utilized Quantitative Research research design to describe and determine the awareness on the harmful effects of using E-cigarettes of the respondents in terms of age, gender, educational attainment, age started using E-cigarette, and length of using E-cigarette.

B. Respondents of The Study

The respondents of the study are the E-cigarette users in selected barangays in, Echague, Isabela, Philippines. A total of 100 respondents are selected using snowball sampling. A friend of the researcher who is a known user of vape was assessed and from his recommendations, the researchers were able to identify succeeding respondents. The process of referral and recommendation from respondents was continued until a total of 100 respondents was reached.

C. Data Gathering Procedure

In gathering and conducting the data of the study, the following steps and procedures have been done strictly due to restriction of amidst pandemic.

Initially, the researchers asked permission from the Dean of College of Nursing of Isabela State University-Echague Main Campus to conduct the study.

Secondly, after the approval of the Dean of College of Nursing, a letter was given and addressed to the barangay captain of each of the selected barangay. This letter contains the objectives and purpose of the study.

Thirdly, upon the approval of the barangay captain, the researcher administered the Survey Questionnaire to the respondents through face-to-face or via Facebook and Google Forms.

Lastly, the researcher interpret and analized the collected and gathered data through Statistical Package for Social Sciences (SPSS).

III. DATA GATHERING INSTRUMENTS

A survey questionnaire have been administered to assess the awareness on the harmful Effect of E- cigarette of among E-cigarette users in selected barangays of Echague, Isabela, Philippines. The survey questionnaire consisted of two parts: the profile of the respondents and the perception and awareness of the E- cigarettes users which was adopted from a foreign study entitled "Awareness and use of E-cigarettes among university students in Shanghai, China by Wenyuanyue W, Maojie L, Yuyang C, Nannan F. September 08, 2020".

A. Statistical Treatment of Data

The collected data have been processed using the Statistical Package for Social Sciences (SPSS).
- Frequency and percentage distribution were used to analyze the profile of the respondents and to determine the awareness of the respondents.
- The mean was served as the totality of how frequent the researchers get the rationale for every part of the table.

Table 1: Statistical Treatment of Data

Point	Mean Range	Interpretation
4	3.51-4.50	Highly Aware
3	2.51-3.50	Moderately Aware
2	1.51-2.50	Slightly Aware
1	1-1.50	Not Aware

- Pearson r Correlation Coefficient have been utilized to determine if there is a significant relationship between variables.

B. Ethical considerations

The researchers guaranteed the confidentiality and privacy of the data from the respondents. Some questions were considered optional like their names. Before administering the survey questionnaire, the researcher asked permission from the respondents and explained the purpose of the study.

Moreover, all information of the respondents are strictly used in academic purposes only. Hence, the respondent's

information had been kept confidential and private.

C. Data gathered, Statistical results and the Findings interpretations

Table 2 : Presents the number of respondents according to their age.

Age	Frequency	Percent
18	5	5
19	10	10
20	20	20
21	28	28
22	20	20
23	8	8
24	5	5
Total	100	100

Most of the respondents are in the age of 21 with a total of 28 (28%) and ages 18 and 24 as the least with a total same number of 5 (5%) age of respondents.

Table 2: Presents the number of respondents according to their gender.

This shows that it was dominated by male respondents 68 (68%) out of the total number of respondents in female 32 (32%) in this study.

Table 3: Presents the number of respondents according to their educational attainment.

Educational Attainment	Frequency	Percent
Undergraduate	83	83
High School Graduate	7	7
College Graduate	10	10
Total	**100**	**100**

Majority of the respondents are undergraduate with a total number of 83 (83%) and the least is high school graduate with a total number of 7 (7%) of respondents.

Table 4: Presents the number of age of the respondents.

Gender	Frequency	Percent
Male	68	68
Female	32	32
Total	**100**	**100**
AGE STARTED USINGE-CIGARETTES	**FREQUENCY**	**PERCENT**
16	7	7
17	14	14
18	28	28
19	25	25
20	17	17
21	9	9
TOTAL:	**100**	**100**

As shown in table 4, most of the respondents are over 18 years old who started their use of E-cigarette(28%), and there was a total of 28 participants. In addition, 7% of the respondents have started using E- cigarettes since they were 16 years old.

Teenagers are particularly susceptible to peer influence and social pressures. The use of e-cigarettes among friends or within their social circles normalize the behavior and increase the likelihood of experimentatio n and regular use.

Table 5: Represents the frequency and distribution of respondents according to their length of using E-cigarette.

LENGTH OF USING E-CIGARETTES	FREQUENCY	PERCENT
1 YEAR	27	27
2 YEAR	33	33
3 YEAR	23	23
4 YEAR	12	2
5 YEAR	4	5
6 YEAR	1	1
TOTAL:	100	100

Majority shows that there are 33 respondents who uses E-cigarettes for at least 2 years with a percentage of (33%). Furthermore, those 27 respondents that uses E-cigarettes for 1 year has a percentage of (27%).

Table 6: Presents the awareness of the respondents according to harmful effects of E-cigarettes

ITEMS	MEAN	INTERPRETATION
Do you think vaping help you quit smoking regularcigarettes?	3.77	HIGHLY AWARE
Do you think E-cigarettes are less dangerous to your health than traditional cigarettes?	3.37	MODERATELY AWARE
Are you aware that E-cigarettes contain nicotine substances?	3.66	HIGHLY AWARE
Do you believe that E-cigarettes are carcinogenic (could cause cancer)?	2.37	SLIGHTLY AWARE
Are you aware that an E-cigarette is not currently regulated by Food and Drug Administration (FDA)?	2.24	SLIGHTLY AWARE
Are you aware that you are harming others' health when you are using E-cigarette in public places	2.91	MODERATELY AWARE
Do you experience (cough, colds, sore throat, etc.) with the use of E-cigarettes?	1.94	SLIGHTLY AWARE
Are you aware that a malfunctioning E-cigarette device could cause mouth injury?	3.29	MODERATELY AWARE
Are you aware that the more you use E-juice that has a high level of nicotine the more risk at your health?	2.98	MODERATELY AWARE
Are you aware that E-cigarette affects your financial stability	2.60	MODERATELY AWARE
Are you aware that using E-cigarette can cause cancer	2.17	SLIGHTLY AWARE
Are you aware that using E-cigarette cause shortness of breath, difficulty in breathing, and hospital admission	2.17	SLIGHTLY AWARE
Are you aware that using E-cigarette causes chronic obstructive pulmonary disease (COPD)	2.08	SLIGHTLY AWARE
Do you think E-cigarette causes cardiovascular disease?	2.25	SLIGHTLY AWARE
Do you believe that using E-cigarette can cause brain damage?	2.07	SLIGHTLY AWARE
Do you think using E-cigarette causes sexual and reproductive dysfunction	1.82	SLIGHTLY AWARE
TOTAL:	2.61	MODERATELY AWARE

As shown in table 6, most of the respondents agreed that "vaping helps quit smoking regular cigarettes" with an average weighted mean of 3.77 or they are "HIGHLY AWARE" which is almost the same as "E-cigarettes contains nicotine substance" with an average weighted mean of 3.66. Furthermore, some respondents are "MODERATELY AWARE" in terms of "E-cigarettes are less dangerous to your health than traditional cigarettes" with an average weighted mean of 3.37 and "you are harming others' health when you are using E-cigarette in public places" has a mean of 2.91 and "a malfunctioning E-cigarette device could cause mouth injury" has a mean of 3.29. Next, in terms of "the more you use e-juice that has a high level of nicotine the more risk at your health" that has an average weighted mean of 2.98. Lastly, is that "E-cigarette affects your financial stability" has a mean of 2.60. Then, for "SLIGHTLY AWARE" that has most results in the column of interpretation, but least respondents agreed

in terms of "E-cigarettes are carcinogenic (could cause cancer)" has an average weighted mean of 2.37, "E-cigarette is not currently regulated by Food and Drug Administration (FDA)" has an average weighted mean of 2.24, "experience (cough, colds, sore throat, etc.) with the use of E-cigarettes" has a mean of 1.94, "E-cigarette can cause cancer" has a mean of 2.17, "E-cigarette cause shortness of breath, difficulty in breathing, and hospital admission" has an average weighted mean of 2.17. In addition, in terms of "E-cigarette causes chronic obstructive pulmonary disease (COPD)" has a mean of 2.08 which is also interpreted as "SLIGHTLY AWARE". Next, is "E-cigarette causes cardiovascular disease" has a mean of 2.25, "E-cigarette can cause brain damage" has a mean of 2.07 and lastly, "E-cigarette causes sexual and reproductive dysfunction" which has the very least mean among all other findings which is, 1.82.

For the totality of each question's mean and interpretation, we have got a total mean of "2.61" and interpreted as "MODERATELY AWARE" since, as you can see on the table, that slightly aware has the most result in the interpretation column. Secondly, is the moderately aware and the very least result in the interpretation column was the highly aware.

IV. RESULTS

Table 7: Significant relationship between the respondent's profile and their awareness on the harmful Effects of E- cigarettes.

Size of Correlation	Interpretation
.90 to 1.00 (-.90 to -1.00)	Very high positive (negative) correlation
.70 to .90 (-.90 to -.90)	High positive (negative) correlation
.50 to .70 (-.50 to -.70)	Moderate positive (negative) correlation
.30 to .50 (-.30 to -.50)	Low positive (negativ) correlation
.00 to .30 (-.00 to -.30)	Negligible correlation

Table 8: Significant relationship between the respondent's profile and their awareness on the harmful Effects of E- cigarettes according to age

Regression Statistics	
Multiple R	0.1571
R Square	0.0247
Adjusted R Square	0.0146
Standard Error	0.4766
Observations	100

Pearson r: Negligible relationship

As seen from above table of regression statistics with pearson r: negligible relationship that age has diminutive to negligible significant relationship in the level of awareness on harmful effects of E-cigarette.

Table 9: Significant relationship between the respondent's profile and their awareness on the harmful Effects of E- cigarettes according to gender

Regression Statistics	
Multiple R	0.0822
R Square	0.0068
Adjusted R Square	-0.0035
Standard Error	0.4809
Observations	100

Pearson r: Negligible relationship

As seen from above table of regression statistics with pearson r: negligible relationship that gender hasdiminutive to negligible significant relationship in the level of awareness on harmful effects of E-cigarette

Table 10: Significant relationship between the respondent's profile and their awareness on the harmful Effects of E- cigarettes according to educational attainment

Regression Statistics	
Multiple R	0.2358
R Square	0.0556
Adjusted R Square	0.0459
Standard Error	0.4689
Observations	100

Pearson r: Negligible relationship

As seen from above table of regression statistics with pearson r: negligible relationship that educational attainment has diminutive to negligible significant relationship in the level of awareness on harmful effects of E- cigarette.

V. DISCUSSION

A total of 100 young adults participated in the survey. This research was carried out in the 1st week of July, 2022 in 4 different barangays in Echague, Isabela (Silauan, Cabugao, Buneg, and San Fabian). The researchers used quantitative research and a snowball sampling type of research design to describe and determine the respondents' awareness of the harmful effects of E-cigarette use in

terms of age, gender, educational attainment, and age started using E-cigarette, and length of use. The survey questionnaire was distributed to respondents both online (Google form) and face to face. The researchers also conducted brief personal interviews with the respondents to obtain clarification and interpretation of the survey questionnaires.

The following are the important findings of this research study:

A. The demographic profile of the respondents in terms of:

- **Age.** The majority were 21 years old, with a frequency of 28, or 28 percent, and 20 and 22 years old, with a frequency of 20, or 20 percent, accounting for more than half of all respondents. Showing that ages 21 were the most influenced in using e-cigarettes than ages 20 and 22.

- **Gender.** Male outnumbered female by 68 (68 percent) to 32 percent (32 percent). Thus, Male are more influenced in using e-cigarettes compared to female based in our scope of four different barangays in Echague, Isabela..

- **Educational attainment.** In terms of educational attainment, undergraduates made up the majority (83, or 83 percent) while college and high school graduates made up the least (10, or 10 percent, and 7, or 7 percent, respectively). Thus, Undergraduates are more prone to be influenced with the use of e-cigarettes than people who're undergoing in high school and college.

- **Age started using E-cigarettes.** The majority of respondents who started using E-cigarettes are 18 and 19 years old with (28 percent and 25 percent, respectively). While, ages 16, 17, 20, and 21 made up the least with (7 percent, 14 percent, 17 percent and 9 percent respectively.) Therefore, 18 to 19 ages were the most prone to be influenced in starting to use of e-cigarettes than ages 16, 17, 20, and 21.

- **Length of using E-cigarettes.** The majority, 27 respondents who have used E-cigarettes for 1 year have a proportion of (27 percent), while 33 respondents have used them for at least 2 years h ave a proportion of (33 percent). While those who have used E-cigarettes for the longest amount of time 3, 4, 5, and 6 years have (23 percent, 12 percent, 4 percent and 1 percent, respectively).

B. To investigate the respondent's awareness on the harmful Effects of E-cigarettes.

➢ *The awareness of the respondents according to harmful effects of E-cigarettes.*

Respondents were given a question wherein they had to answer YES, PARTLY, NO and NOT SURE. The question asks "Do you think vaping help you quit smoking regular cigarettes? Has a mean of 3.77 which means that which indicates that users of traditional cigarettes use E-cigarettes as their smoking cessation product and indicates as "HIGHLY AWARE". This result is the same as the question "Are you aware that E-cigarettes contain nicotine substances?" has a mean of 3.66 which also indicates that respondents are "HIGHLY AWARE". Lastly, is "Are you aware that you are harming others' health when you are using E-cigarette in public places?" has mean of 2.91 or

"HIGHLY AWARE".

However, other questions that attest their awareness regarding the effects of E-cigarettes indicates that they're "MODERATELY AWARE" like questions: "Do you think E-cigarettes are less dangerous to your health than traditional cigarettes?" and "Are you aware that a malfunctioning E-cigarette device could cause mouth injury?" and "Are you aware that the more you use e-juice that has a high level of nicotine the more risk at your health?" and "Are you aware that E-cigarette affects your financial stability" has a mean that ranges from 2.51-3.50 which is 3.37, 3.29, 2.98 and 2.60 respectively.

Other questions that has mean of 2.51 below indicates that they're "SLIGHTY AWARE" and also below 1.51 indicates that they're "NOT AWARE" Such questions like "Do you believe that E-cigarettes are carcinogenic (could cause cancer)?" has mean of 2.37 or "SLIGHTLY AWARE" and "Are you aware that using E-cigarette can cause cancer?" has mean of 2.17 or "SLIGHTLY AWARE" and "Are you aware that using e-cigarette causes shortness of breath, difficulty in breathing, and hospital admission?" has mean of 2.17 or "SLIGHTLY AWARE" and "Are you aware that an E-cigarette is not currently regulated by Food and Drug Administration?" has a mean of 2.24 or "SLIGHTLY AWARE" and "Are you aware that using e- cigarette causes COPD (chronic obstructive pulmonary disease)?" has mean of 2.08 or "SLIGHTLY AWARE" and "Do you think E -cigarette causes cardiovascular disease?" has mean of 2.25 or "SLIGHTLY AWARE" and "Do you believe that using E-cigarette can cause brain damage?" has mean of 2.07 or "SLIGHTLY AWARE" and "Do you experience (cough, colds, sore throat, etc.) with the use of E-cigarettes?" has mean of 1.94 or "SLIGHTLY AWARE". Lastly, "Do you think using E-cigarette causes sexual and reproductive dysfunction" has mean of 1.82 or also "SLIGHTLY AWARE" .

So, most of the respondents awareness about the effects of E-cigarettes pertaining questions are "SLIGHTLY AWARE" while, there were least "HIGHLY AWARE" of the respondents. Fortunately, there were no "NOT AWARE" mean results from the findings of given queries.

C. To identify the significant relationship between the respondent's profile and their awareness on the harmful Effects of E-cigarettes .

- **Significant relationship between the respondent's profile and their awareness on the harmful Effects of E-cigarettes according to age.** By using Pearson Correlation Coefficient in identifying the significance between variables and the problem. In terms of Age we have got a multiple correlation (Multiple R) of 0.1571. Therefore, age has very little to negligible significant relationship in the respondent's level of awareness on harmful effects of E-cigarette.

- **Significant relationship between the respondent's profile and their awareness on the harmful Effects of E-cigarettes according to gender.** In terms of Gender we have got a multiple correlation (Multiple R) of 0.0822. Therefore, gender has very little to negligible significant relationship in the respondent's level of awareness on harmful effects of e-cigarette.

- **Significant relationship between the respondent's profile and their awareness on the harmful Effects of E-cigarettes according to educational attainment.** In terms of educational attainment we have got a multiple correlation (Multiple R) of 0.2358. Therefore, educational attainment has very little to negligible significant relationship in the respondent's level of awareness on harmful effects of E-cigarette.

VI. CONCLUSION

This study concluded in terms of profile variables that most of the respondents are 21 years old and majority of male respondents. Most of the respondent's educational attainment are undergraduates and the age where they started using E-cigarette dominated at the age of 18 years old.

This study concludes that respondents from the four (4) barangays in Echague Isabela are moderately aware on the harmful effects of using E-cigarettes. This study identified awareness of the respondents with regards on to their response on the data gathered. The study shows that respondents are moderately aware of the harmful effects of using E-cigarette. Concerning to their physical health that can cause a lot of diseases such as cancer, pulmonary diseases, brain damage, cardiovascular disease, and sexual and reproductive dysfunction. The study has shown that respondents are moderately aware that their financial and activity of their daily living are affected when they started using E-cigarette. Regarding to their social, this study also shows that respondents are moderately aware in harming others when using E-cigarette.

This study concludes that there is no significant relationship between the respondent's profile and their awareness. The result of the data gathered in this study on the relationship between the respondent's profile to their awareness has little or negligible correlation. This means, that the respondent's awareness on the harmful effects of E-cigarettes has a tiny amount of significance between their Age, Gender, and Educational attainment. This might be because tha harmfull effect of vape is an emerging condition among its users. A good info graphics about its harmful effect could be a good project to help vape users become aware of the danger of using vape.

The researcher recommends to conduct the data gathering process via face to face. Because, we are unable to gather the all data via face to face due to the pandemic restrictions.

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