

Perception and Influencing Factors of E-cigarette Use Among Young Adults in H.Dh.Hanimaadhoo, Maldives

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Abstract

Introduction: The use of E-cigarette among young adults in the Maldives has increased in an alarming rate in recent years. This study focuses on exploring the perception and influencing factors of E-cigarette use among young adults in H.Dh. Hanimaadhoo, Maldives.

Methods: This is a qualitative phenomenological study conducted between June to August 2023. In this study, 12 young adults aged 18 to 25 years who have used or are currently using E-cigarettes were interviewed. The interviews were conducted using a semi-structured interview questionnaire guide. The data was analyzed using thematic analysis. Five main themes emerged: advantages and disadvantages, social influences, psychological influences, contributing factors and access.

Results: The study shows that current E-cigarette users believe E-cigarettes are harmful to health. Peer pressure and friends who use E-cigarettes, social trends and popularity have been identified as social influences. It has also brought up addiction and the level of satisfaction as perceived psychological factors. Favourable taste and smell, level of enforcement on rules

and regulation were also believed as facilitating factors. Their low price, convenience, and availability made them widely accessible.

Discussion: Young adults' use of E-cigarettes is influenced by a variety of factors including social, psychological, and other contributing factors in addition to their perception towards it. By strengthening pertinent laws and regulations, it is necessary to raise awareness of the potential risks associated with E-cigarette use and to decrease its overall use. The foundation of prevention efforts is a thorough interprofessional collaboration to address public health concerns related to E-cigarette use.

Keywords: perception, influencing factors, electronic cigarettes, vapes, young adults

Introduction

An electronic cigarette (E-cigarette) is a battery-powered device that emits a vaporized nicotine solution for inhalation, providing the sensation of inhaling tobacco smoke (Cattamanchi, 2020). Additionally, it contains propylene glycol, which cause harmful effects on health such as respiratory and cardiac problems (American Cancer Society (ACS), 2022). E-cigarettes have been proposed as a possible replacement for traditional cigarettes and tobacco, with the potential to reduce harm (Sapru et al., 2020). Conversely, E-cigarettes are not safe for children, young adults, pregnant women and non-smokers (Centres for Disease Control and Prevention (CDC), 2022). It is classified as "tobacco products" by the Food and Drug Administration (ACS, 2022).

The use of E-cigarettes is frequently referred to as "vaping" however, it produces an aerosol, which differs from a vapor (ACS, 2022). It is known by different names such as "e-cigs", "e-hookahs", "vape pens", and available in different flavors which makes them desirable to use (Sapru et al., 2020). E-cigarettes expose users to high levels of toxins, which may

significantly increase the risks of heart and lung diseases which is responsible for more than half of all smoking-related deaths (Glantz, 2018). Despite, Jerzyński et al. (2021) stated that there was an estimation of 68 million E-cigarette users globally, in the year 2020.

Recent surveys show a particularly high uptake of E-cigarettes among young non-smokers (Arshad et al., 2022). Since their arrival to the market, these products have risen in appeal notably among youth and young adults. Sapru et al. (2020) stated that according to the United States (U.S) National Health Survey, the proportion of young adults (aged 18 to 25 years) who use E-cigarettes increased from 2.4% in 2012 to 5.2% in 2015. The Global Youth Tobacco Survey (GYTS) 2019 revealed, among youth in the Maldives, approximately 17.1% have used E-cigarettes at some point of their life (WHO, 2020). Additionally, a study conducted among high school students in Addu City found 32.2% of the students have tried E-cigarettes (Faroog, 2022). However, E-cigarettes have the potential to benefit some while harming others, scientists are still unsure of their effectiveness in helping to quit smoking (CDC, 2022).

E-cigarettes are widely advertised as a risk-free substitute for tobacco (Grana & Ling, 2014). Due to the conflicting information, its usage is now drastically expanding in vulnerable groups, notably young people, and pregnant women (Virgili, 2022). A study conducted by Kurdi et al. (2021) reported that in comparison to non-users, significantly fewer E-cigarette users believed that E-cigarettes cause disease, and users believed that E-cigarettes were less harmful than traditional cigarettes and could help prevent traditional cigarette smoking. Additionally, a study by Barrington-Trimis et al. (2015) revealed the use of E-cigarettes is strongly positively influenced by psychosocial factors, including home use, friends' use of and favourable attitudes towards E-cigarettes, and participant perception of the harm of E-cigarettes. Another survey report revealed that curiosity, appealing flavours and peer pressure were the most common motivations for E-cigarette experimentation (Kong et al., 2015).

Moreover, a study conducted by Romijnders et al., (2018) on perceptions and reasons regarding E-cigarette use among users and non-users, highlighted variety of perceptions and reasons categorized as “risk perception” which includes health risks, “perceived benefits” which include taste, smell and safety for bystanders and then “reasons for use” includes curiosity, smoking cessation and friend use. On the other hand, Kong et al. (2015) reported that most common reasons participants discontinued use of E-cigarettes as losing interest perceiving E-cigarettes as “uncool” and health concerns.

In Maldives although, underage sales of tobacco is prohibited and controlled under the Tobacco Control Act (Law 15/2010), an investigation carried by GYTS in Maldives indicated that the use of E-cigarettes is increasing among youth (Stellar Market Research, 2022). Meanwhile, the Maldives Customs Service revealed that while there is a decrease in cigarette import, the import of E-cigarettes has increased seven-fold (Public Service Media, 2022). Young adults may decide whether or not to use E-cigarettes based on their own risk and benefit perceptions due to conflicting information. This might result in increases in the use of these products. Moreover, hospital admissions and deaths may increase if young adults are not adequately informed and counselled about its harmful effects. In 2020, 50 states of the District of Columbia, and two U.S. territories have reported a total of 2,807 hospitalized E-cigarette, or vaping, product use-associated lung injury (EVALI) cases or deaths (CDC, 2020). Due to increasing popularity, more recent studies have to be conducted to understand the factors associated with the rise in E-cigarette use among young adults in order to inform local and national programs and policies (Short & Cole, 2021). GYTS investigated E-cigarette use in the Maldives for the first time in 2019 (WHO, 2020). This indicates that there have been limited studies on this topic in the Maldivian context. In order to inform relevant authorities to successfully develop interventions to prevent E-cigarette use, it is important to determine the influencing factors and young people's perceptions towards it. To develop the

intervention to the needs of the specific population and create health programs, it is necessary to identify the predictors of E-cigarette use in the specific environment (Wężyk-Caba et al., 2022). The findings of this study can help to strengthen effective vaping cessation strategies and interventions aimed at professionals, policymakers, and the general public.

Hence, there is lack of research and surveys on this topic in Maldives, there is a need for further investigations to minimize the gap in understanding the use of E-cigarettes among young adults and to find associated factors. Therefore, perception and influencing factors of E-cigarettes among young adults in H.Dh.Hanimaadhoo will be explored widely in this study.

Theoretical Framework

Individuals may adjust to a particular behavior due to a variety of factors and beliefs. The “Theory of Planned Behavior” (TPB) is used as a framework for this research. The theory holds the attitude, subjective norm, and perceived behavioral control with respect to the behavior serve as the foundation for the intention, and these three factors are, respectively, determined by behavioral, normative, and control beliefs (Ajzen, 2015). A conceptual framework has been made by linking with the TPB (Figure 1). Hence, studies on perception and influencing factors of E-cigarette use among young adults were explored and incorporated into TPB.

Behavioral Beliefs : E-cigarettes were mentioned by participants as a nicotine replacement therapy and smoking cessation aid (Romijnders et al., 2018). However, despite a strong desire to reduce nicotine dosage, the majority of respondents did not intend to complete cessation of E-cigarette use (Simmons et al., 2016). Meo & Asiri (2014) stated that non-scientific claims about E-cigarettes are causing public confusion and are perceived as being risk-free and less addictive by many. Conversely, health risks have been identified as perceived risk by the participants (Romijnders et al., 2018). Although many people were unsure of the potential

health effects, they thought smokers might benefit from switching and it is safer for people around (Romijnders et al., 2018).

Normative Beliefs: Participants mentioned social influence of family, peer, and personal curiosity in relation to using e-cigarettes (Romijnders et al., 2018). Friends who had previously used E-cigarettes and being with them in the E-cigarette available places were cited as reasons for first use (Alexander et al., 2018). Moreover, gender, peer use and perception of E-cigarettes, as well as history of smoking, have all been linked to e-cigarette initiation in multiple studies (Short & Cole, 2021).

Control Beliefs: Accessibility and other people's behavior in addition to affordability, reducing stress and the wide range of flavors were considered as facilitating factors by the participants (Wattick et al., 2021). Similarly, favorable taste and smell were considered as perceived benefits in the study conducted by Romijnders et al. (2018). In addition to flavors, many participants mentioned the ability to do tricks (Alexander et al., 2018). The key drivers for E-Cigarette market growth in Maldives are designated smoke-free areas and government rules and regulations (Stellar Market Research, 2022).

Materials and Methods

Research Design

This is a qualitative phenomenological study to investigate the perception and influencing factors of E-cigarette use among young adults in H.Dh. Hanimaadhoo. The systematic investigation of social phenomena in natural settings is known as qualitative research (Teherani et al., 2015). Qualitative research consists of gathering and analyzing non-numerical data such as text, video, or audio in order to better understand concepts, opinions, or experiences (Bhandari, 2022). The phenomenology approach emphasizes the importance of understanding people's experiences and how they interpret the world. Additionally, it

explores the value of in-depth interviews and participant observation (Bliss, 2016). This method was chosen to gain a deeper understanding from the individuals involved in the behavior by exploring the subjects' perceptions and driving forces behind their specific behavior.

Sample, population or subjects

The sample framework for this study is population, aged between 18 to 25 years in H.Dh. Hanimaadhoo, Maldives. According to Hanimaadhoo Council (2023) the population of this age group currently in the island is 239 (125 male and 114 female). A purposive sample of 12 participants were selected for the study. Purposive is a non-probability sampling technique where researchers use their own judgment to select members from the population (Anon, 2021). In a purposive sampling, the researcher was biased and selective, deciding what needed to be learned and concentrating on the essential traits of an interesting population that, in their experience, responds more favorably to research questions (Bandhari, 2022). This strategy was nonetheless chosen because this is a qualitative study, and the chosen subjects have unique qualities that will be required to assess the research questions and help the study achieve its objective. The initial target was to include participants from both genders. The study, however, only included males because females declined to participate. Maldivian males between the ages of 18 and 25 in Hanimaadhoo with a history of using E- cigarettes were included in the study. Participants involved in the pilot study and those who refused to participate were excluded.

Instruments and Materials

In this study, participants were interviewed by using a semi-structured interview questionnaire guide (Appendix 1) which includes open-ended questions with a probing approach. There is opportunity to pose any inquiries in any request, following digressions or looking for clarification of past responses or elaboration of reactions, such, semi-structured

interviews steer the meeting yet consider flexibility (Lopez & Whitehead, 2012). Questions were formulated in the areas related to their vaping history, supply and experiences, perceived beliefs about E-cigarettes and the factors driving the young generation towards it. An open-ended probing question generates deep thoughts and detailed responses, supports deeper comprehension for both the person asking and the one answering (Anon, 2021).

A pilot study was carried out to check the appropriateness of the interview as well as to check the validity and reliability of the questionnaire guide. The pilot study helps to find any flaws in the data collecting strategy and allows to correct them before the main study is conducted (Simkus, 2022). In the pilot study, two participants of the same age group were interviewed using the same tool. Before the main study, any flaws in the interview method, structure, trustworthiness and reliability, time frame and the length of the audio recording were all examined in the pilot study.

Data Collection

Data was gathered through open-ended, semi-structured interviews with the assistance of a questionnaire guide. A common strategy in qualitative research is semi-structured interviews, in which the interviewer specifically investigates key aspects of the phenomena being examined (Barrett & Twycross, 2018).

The interview sessions were conducted for 12 young adults with the participant's consent to ensure accurate details, and data was gathered until saturation was reached. Reaching topic saturation, the point where no new thematic data is received, is benchmark for qualitative sample size (DeJonckheere & Vaughn, 2019). The data collection process was arranged based on the participants' availability and flexibility. The interviews were conducted face to face and audio recorded. The place and time that is intended to conduct the interview was pre-determined to ensure the safety, privacy and feasibility for participants as well as the

researcher. The date, time and place were notified ahead of the interview. The interview needs to have been set in advance at a time and place that is convenient for the interviewee (DeJonckheere & Vaughn, 2019). The interviews were audio-recorded to ensure that they are available for playback to confirm that accurate information has been obtained.

Data Management and Data Analysis

The verbatim transcription was carried out in English and analyzed by using six step approach of thematic analysis. The six-step approach of thematic analysis includes familiarization, coding, generating themes, reviewing themes, defining and naming themes, and producing reports (Kiger & Varpio, 2020). Thematic analysis is used to analyze categories and display themes or patterns relating to the data (Alhojailan, 2012).

The first step involves transcribing audio, taking notes while reading, and exploring the data to become familiar with it (Caulfield, 2022). Coding as a second step which includes highlighting sections of text used to summarize key ideas and terminologies in data(Caulfield, 2022). In the third stage, the coded and compiled data extracts are examined to identify and come up with prospective themes (Kiger & Varpio, 2020). After contrasting the themes with the original data, make any necessary modifications to the original data and provide justification for it. Furthermore, define and name the themes depending on what they indicate to make a unified story of the data (Caulfield, 2022). Finally, produce the report by writing up the final analysis and description of findings that relate to the themes, research questions, and literature (Kiger & Varpio, 2020).

Any statements in the participants' narratives that were specifically related to the phenomenon under investigation were deemed significant, and a list was created, and significant statements were assembled, and a meaning was formulated. This was accomplished through repeated readings of the transcripts, familiarization with the data,

coding of the data, and the discovery of patterns that resulted in the development of themes. The description was then summarized so that the fundamental structure of the phenomenon was established, and the final step was to ensure the data's credibility by discussing it with the supervisor.

Ethical Consideration

Researchers must comply with a certain set of principles when collecting data from individuals. The key ethical considerations work to safeguard the rights of the participants, to improve the validity of the research and to uphold the scientific integrity (Bhandari, 2022).

During the research process each participant was briefed on the purpose and informed written consent (Appendix 3) was obtained prior to data collection. Participants were informed and assured that there will be no risk, harm, or financial benefits of participating in this study. In order to reduce the possibility of harm the researcher must obtain informed written consent from the participants, preserve anonymity and confidentiality of the participants, avoid misleading practices and provide the participants with the option of right to withdraw from the study at any time (Wagle, 2020). The confidentiality of the information and the privacy of the participants were maintained. Participants were made aware of their option to withdraw from the research at any time. The data collected during the research process ensured that access to all confidential data is managed appropriately. Access was limited to the researcher only. The participant's anonymity was maintained throughout the research process by preventing the disclosure of their names and identifying information during the compilation, review, and reporting of the study's findings. Data was secured with a strong password. Antivirus software, data encryption and backups were controlled and managed throughout the process.

Prior conducting this research, ethical approval was obtained from the Villa College Centre for Post Graduate Studies (CPS), Ref No: VC/CPS/2023/E-007 (Appendix 4), followed by permission from National Health Research Council (NHRC) of Ministry of Health, Maldives, Registration number: NHRC/2023/13 (Appendix 5). Further permission to conduct the research was obtained from Secretariat of Hanimaadhoo Council, H.Dh.Hanimaadhoo, Maldives, Ref No: 258/PRIV/2023/27 (Appendix 6). To guarantee that the proper ethical standards are maintained, an ethics committee should examine studies involving human subjects (WHO, 2022).

Results

After coding the data on the perceptions and influencing factors of e cigarette use among young adults, the codes were classified into five main themes evidenced across participants responses: Advantages and disadvantages, social influences, psychological influences, contributing factors and access (Table 1).

Advantages and Disadvantages

Participants held both positive and negative attitudes towards E-cigarette use. Participants believed that E- cigarette smoking is harmful to health. For instance, some participants commented on the association between E-cigarette smoking and lung and throat problems.

I faced lots of difficulties like gastritis and throat pain (Participant 2).

I get cold very easily when I used it, so I stopped it. It has risk of lung diseases and also it effects growth also. In vapes, it produces water in the lungs due to the vapours it creates. This also reduces the respiration that leads to catching colds and other difficulties easily (Participant 8).

factors like damages to respiratory system... most commonly told is that it creates water in the lungs (Participant 11).

I have heard and seen in social media also that vaping created water in lungs and creates many more health problems...Some of my friends said they feel like having chest pains and easily catch colds (Participant 12).

Some participants believed that using E-cigarettes reduces stamina and causes more tiredness.

We know the difficulties we face when we vape... For example, I'm a football player... It makes me tired more easily. It makes you weaker. I also started vaping at age of 19 but stopped it during my training for a tournament because I felt tiredness during training sessions...after stopping It improved my stamina (Participant 1).

I know that when I vape too much, I can feel short breath and tiredness while I play (Participant 6).

I go exercise and play football regularly. While exercising, I feel short breath and make me tired more easily (Participant 7).

When we play football and other sports, I feel tired more easily than before (Participant 12).

Participants talked about their opinions of traditional smoking and E-cigarettes. Some claim that E-cigarettes are equally or more harmful than regular cigarettes.

Most of them use E-cigarettes saying they are less harmful. But people say they both are equally harmful...things like lung cancer and that sort of things (Participant 6).

From what I have read, vape is more damaging, there are many unknown things about it. It is not researched well enough to know all about it. Cigarettes are more researched, so it is shown that it is more damaging... there is nothing cool about cigarettes and vapes (Participant 7).

But it's a debate of two ways. Cigarette smokers say it is less harmful... vape users say it is..I think both vaping and cigarette smoking are equally damaging to health (Participant 12).

Some participants, on the other hand, expressed optimism towards E-cigarettes stating that E-cigarettes are less harmful claiming it as a better alternative to traditional cigarette smoking.

Health wise and cost wise also I would say E-cigarette is better (Participant 5).

I found it better than regular cigarettes. Because when I smoke regular cigarettes, I always have some bad breath, mucus collected in the throat and so on. But when I changed to vaping it, all gone and find it easier... they both have similar health hazards, like damages lungs, some face shorten breath, chest pain and so on (Participant 9).

Traditional cigarettes are more harmful to health than vapes....as much as I know it has more nicotine and produce more smoke... that's why vape is better compared to cigarette (Participant 10).

Participants also discussed about using E-cigarette as an aid for quitting traditional cigarettes smoking. There were conflicting opinions expressed and revealed. Some relied heavily on E-cigarettes to help them quit smoking.

I stopped cigarette smoking after starting to vape (Participant 3).

I started vaping to quit smoking.... A lot of people quit cigarette after starting to vape (Participant 5).

I know many people who stopped regular cigarettes and changed to vaping (Participant 12).

Few participants disagreed that E-cigarettes aid in smoking cessation and emphasized on conducting awareness sessions.

That's a misconception that it helps to quit smoking...it seems youth do not have enough knowledge regarding the harmful effects it cause...i think awareness programs should be conducted beginning from the schools itself (Participant 2).

From what I have seen in don't believe... Because there are many who vape to stop regular cigarettes but after a while, they sometimes smoke cigarettes...correct information and community-based awareness sessions should be held in every Island (Participant 7).

Social Influences

Participants described their use of E-cigarettes explicitly, which included their social motivations behind using them. Many claimed that the first use was in cafés and coffee shops.

It was on a coffee table and we all shared vape just for fun to taste it (Participant 1).
it was with friends at coffee tables. When they have it, I take it and use it. More like sharing. (Participant 6).

Most of the time on coffee tables with friends... just join friends for fun I continued (Participant 8).

Peer pressure and friends who use E-cigarettes had a huge impact on their decision-making. Some began to use simply to fit in with the group.

It was when I was in job. Everyone used it. So I wanted to taste it... Actually, they told me that its nice so try it (Participant 7).

Peer pressure, feeling of belonging to the group (Participant 10)

when I was in school. A friend offered me that (Participant 11).

Participants also mentioned society, trends, and popularity as influential components. Many believed that in society people don't see them as a youth if they don't use it and accept it claiming it is safer than tobacco products. Also, social media influence was another driving factor highlighted by the participants.

Someone brought it for me... it was given by an older person who have a job... I think most of them see it as modern trend (Participant 4).

Because it is so mainstream now. I think young adults are preconceived by the fact that using those things are a cool flag of their life (Participant 5).

Now that they see lots of advertisements through social media and other platforms in songs and videos (Participant 6).

Psychological Influences

The results of the study showed that the likelihood of using and continue to use E-cigarettes was explained by young adults' perceptions and curiosity about them. A few of the participants admitted that the initiation of E-cigarettes was out of curiosity to know about how they actually felt.

when I see others vape, I feel like vaping (Participant 1).

It was to experience the feeling and taste of it. Some of my friends used to vape. I liked the smell (Participant 10).

I wanted to taste it, so I asked him if I could taste it (Participant 12).

The participants also brought up the extent of addiction as a reason why people keep using them.

I think most of the young adults who start using vape is due to friends. They want to join them, for fun. But soon they get addicted and find it difficult to stop. Most of my friends are like that (Participant 7).

I would say it's a waste of money. I would say to stay away from them... I believe that is addictive (Participant 8).

- I will not recommend this to anybody because I know that there are some health risks in this. But personally, I like it... Urge to have one. So yeah, I think it is addictive (Participant 12).

A significant psychological factor that emerged during the study was the level of satisfaction they feel after using them, especially during stressful times. Some participants thought it could help them relax.

Vaping also have its own risk. So not something good as a habit... but then there comes the satisfaction I get after using which makes me to use again and again (Participant 4).

Suppose it is stressful or something inconvenient happens it gives the satisfaction from E-cigarette or regular ones we use (Participant 5).

In my opinion, it not a cool thing to do knowing that I know the health hazards about it. I don't think any particular benefit. But satisfaction is there...when I'm stressed, I tend to use it more often and I feel it provides ease and a sense of satisfaction (participant 11) .

Contributing Factors

An account of participants responses indicated a number of factors that they believe could contribute E-cigarette use among young adults.

Participants identified the favourable taste and smell among major contributing factors.

Vapes are more appealing. I liked the smell and taste. It is more like having a candy
(Participant 2)

Yes I liked the taste... When I started, I got very good flavours, and the taste was good....moreover, the smell added as an advantage...that's the reason I preferred vapes (Participant 4)

In regular cigarettes had an irritant smell with made me uncomfortable. But vapes do not have that. Vapes have a fruity smell and taste. That's why I like it most
(Participant 5).

The level of enforcement on rules and regulation were also believed as a facilitating factor by the participants.

Shops that sell vapes have notice prohibiting underage sales of them...But I don't know if they are enforced in the island... in schools also they have many cases of vaping (Participant 1).

They are the same as regular cigarettes and underage sales are prohibited. But we find that many underage kids use them (Participant 7).

They are not enforced. Specially individuals who sell them, they sell it to anybody no matter how old or young you are (Participant 9).

Access

According to the findings of this study, vapes are easily accessible and widely used by young people.

The majority of participants emphasised the availability of dedicated vape stores and individual sellers as the main means of access to E-cigarettes.

The market is expanding throughout the country, and now there is an E-cigarette shop on the island, as well as individual sellers (Participant 3).

There are individuals and shops that sell e-cigarettes. Anybody can buy it from them.

No matter how old you are they simply sell it (Participant 8)

Now we can buy them in the island also. So now it is very easy to get them... there is a special shop for vapes and some individuals also sell them in the island. Now it is easily available in the island (Participant 12).

Cost and convenience were also noted as important factors for E-cigarette users that make it feasible for them to access E-cigarettes. Being less expensive than regular cigarettes is an important reason why people use them.

This is far less expensive than regular cigarettes. I normally spend MVR400. For a cigarette smoker he will spend an average of MVR3000 (Participant 1).

Vape is cheaper than regular cigarettes. That's why vaping is increasing (Participant 3).

Participants also noted that these gadgets can be used in secrecy and are easy to conceal.

If we vape there is no smell, so it is easy to hide (Participant 1).

Mostly flavour, less smell you can use it anywhere, no need to have a lighter... Most of them use it in secrecy, it is easy for them to hide it from family (Participant 7).

It is more convenient and less expensive...People also don't despise it as much as they do regular cigarettes. I prefer it because it is simple to hide from family members.

They don't catch it as easily as they do when we use regular cigarettes...I believe it's simply because of the smell (Participant 9).

Discussion

The purpose of this study was to learn more about the perceptions and factors that influence E-cigarette use among young adults in H.Dh.Hanimaadhoo. This study has brought to light important issues in the community. When viewed as a whole, the study findings demonstrate various elements, including awareness regarding advantages and disadvantages of using E-cigarettes, social and psychological influences, other contributing factors and methods of access.

The level of perception and beliefs regarding the advantages and disadvantages of using E-cigarettes was quite consistent and could be attributed to participant's exposure to right information. According to recent research, young adults who try E-cigarettes are more likely to switch to conventional cigarettes even though they believe E-cigarettes to be less harmful and prefer them to conventional cigarettes (Bares & Lopez-Quintero, 2021). The consensus among all participants was that E-cigarettes are bad for health. Similarly, Mackel et al. (2018) study revealed young adults believed using pod-based and/or other types of E-cigarettes has chances of having negative health and social effects. Conversely, Klesh et al. (2023) revealed that current users were less likely to believe that E-cigarettes could be harmful to one's overall health. Additionally, a study conducted by Bernat et al. (2018) reported that less than one half of the sample believed that E-cigarettes are harmful to health. Participants in this study also made a comparison between E-cigarettes and traditional cigarettes, saying that there are two opposing views on whether one is better than the other. Some believed E-cigarettes are equally or more harmful than combustible cigarettes while others oppose, and many believed E-cigarette as an aid for smoking cessation while few disagrees. Meanwhile, the findings of the study conducted by Klesh et al. (2023) found that current E-cigarette users were more likely to agree that E-cigarettes are a safe and effective way to quit smoking, whereas never users were more likely to disagree. Overall, participants in this study agreed

that E-cigarettes cause more harm than good, despite being used as a tool for quitting smoking and as a healthier alternative to traditional cigarettes. Meanwhile, Zhao et al. (2023) found that while most participants were aware of the dangers of E-cigarettes, perceptions of E-cigarettes differed between young adults who used and did not use E-cigarettes, in terms of specific risks, more adolescents in the control group mentioned lung damage than adolescents in the case group, and only adolescents in the control group believed that E-cigarettes could cause other systemic diseases. The study shows that current E-cigarette users believe E-cigarettes are harmful to a person's overall health but safer than other forms of tobacco. The study's findings, however, indicate that the majority of participants continue to use E-cigarettes despite being aware of their dangers. Perhaps more focused initiatives are required to reduce young adults use of E-cigarettes.

Another important factor that emerged during the study was the social influences that caused this behaviour to skyrocket among youth. The shared environment significantly influences the initiation and regular use of E-cigarettes and affiliation with friends who use E-cigarettes among adolescent and young adults. Participants described their first experiences with E-cigarettes as occurring primarily at coffee tables where youth and adults share their vapes. As peer pressure played a significant role in their decision-making, being around friends who use E-cigarettes influenced their decision to try them in the first place. Friends were the most frequent source of the first E-cigarette product among survey participants (Groom et al., 2021). Participants in this study also emphasised that trend, popularity, and social acceptance were key factors in why it became so widespread in the community. These findings are supported by a number of other studies. Wang et al. (2022) reported that having best friends who used E-cigarettes and past 30-day exposure to E-cigarette advertising were more likely to feel curious about using E-cigarettes and more likely to start using them at follow-up. Additionally, participants acknowledged the popularity and acceptance of E-cigarettes among

their peers (Park et al., 2019). In a similar vein, the present study also highlighted how popular and cool it is to use E-cigarettes to blend in with one's peer group. Consistently, Wallace & Roche (2018) stated E-cigarette use was seen as having a positive social impact by those who used them more frequently and by those who had friends who used them. Similar findings showed, compared to committed never users, susceptible never users and all use groups were more likely to attribute benefits of E-cigarette use to having more friends, looking cool or fitting in, feeling more at ease in social settings, and stress relief (Bernat et al., 2018). Efforts to reduce youth vaping must consider peer influence and include measures to reduce E-cigarette advertising exposure. Emphasizing on the popularity, Groom et al., (2021) stated that vapes advertising and marketing on social media had a strong association with friend networks; in fact, the odds of friends being the source of the first vaping experience were twice as high for those who had seen ads on social media. The study findings show that popularity, acceptance, and peer use of E-cigarettes were significantly associated with contemporary curiosity about using E-cigarettes. These results imply that in order to reverse the growing trend of youth vaping, efforts must be made to alter social norms towards E-cigarettes and to communicate the risks of E-cigarette use among young adults.

It was thought that some psychological factors may also play a role in why young people engage in this behaviour. Participants in this study believed that E-cigarettes are somewhat addictive and provide a sense of satisfaction and highlighted as the reason why people continue to use. Similar findings by Russel et al. (2022) showed that the majority of young people believed that using E-cigarette would expose them to some risk of health problems and addiction. However, on the other hand, Dobbs et al. (2016) stated that the perception that E-cigarettes are less addictive and harmful than traditional cigarettes may be an important risk factor for E-cigarette use. This study also found that young adults use these devices more during stressful times. According to National Council for Mental Wellbeing (2022), about

81% of young people reported beginning to use tobacco products to deal with stress, anxiety, and depression. In line with the risk-taking behaviour that may be more prevalent in this population, current users of E-cigarettes recognised that they might be addictive (Klesh et al., 2023). Additionally, for all smoking and vaping behaviours, there were interactions between psychological distress variables and intentions to use E-cigarettes (Cabral, 2022). Moreover, a study conducted by DiPiazza et al. (2020) reported participants who used E-cigarettes said they enjoyed their device and could feel the vapour in their mouths, noses, lungs, and throats leaving some sort of a self-satisfaction. Findings indicates however, many young people are not aware that using E-cigarettes can make mental health issues worse hence, findings suggest that the factors that influence young people's perceptions must be investigated further.

The study revealed number of other contributing factors related to E-cigarette use including their appeal and the lack of enforcement on rules and regulation. The study findings revealed that young adults are more likely to use E-cigarettes because of their pleasant taste and smell. All the participants highlighted the most important factor they like about E-cigarette is due to its favourable taste and smell. In support of this finding, according to the 2019 NYTS, flavouring of tobacco products was cited as one of the top reasons (along with marketing and advertising) for beginning use of all tobacco products, including E-cigarettes, by middle and high school students (APHA, 2020). Likewise, Romijnders et al. (2018) findings revealed perceived benefits included improved taste and smell, as well as bystander safety and reasons for use included (health) benefits, curiosity, quitting smoking, and having friends who use E-cigarettes which in terms correlated with the present study findings. In addition, one of the top explanations given by young people for using E-cigarettes is the variety of fruit, lolly, and other sweet flavours available (Greenhalghetal., 2022). Another study by Zhao et al. (2023) revealed in terms of feelings about using E-cigarettes, 80% of adolescents had positive

feelings about them; comfortable, fun, and good taste were frequently used descriptions. Moreover, the most typical causes of E-cigarette initiation have been listed as having a friend or family member who uses, the availability of flavours, and the belief that E-cigarettes are less harmful than other forms of tobacco (Klesh et al., 2023). This study findings correlates the above recent studies findings. According to the study findings, another major factor contributing to youth engaging in this behaviour is a lack of enforcement of rules and regulations. Participants emphasised that unauthorised sales of E-cigarettes to minors could be a motivating factor for young people to begin vaping. E-cigarettes are also sold online, including to minors, via platforms such as the Internet (American Public Health Association, 2020). According to studies, more than 30% of teens who vape are more likely to start smoking cigarettes than teens who do not vape (National Library of Medicine, 2023). Participants emphasised that although the sale of E-cigarettes to minors is prohibited in the Maldives, they are not sure that the law is properly enforced everywhere. APHA (2020) also stated that despite a few regulatory actions at the federal and state levels, E-cigarettes have largely remained unregulated. Hence, youth reported being able to obtain E-cigarettes from stores that were willing to sell to underage customers (such as gas stations and vape shops that don't require ID) and from older friends (Taylor et al., 2021). Tragically, the APHA (2020) reported that evidence on the contribution of E-cigarettes to nicotine product initiation among people who have never smoked, as well as the role of E-cigarettes in the transition to the use of conventional tobacco products, has been established. This could be one of the reasons why it is drastically increasing among youth and why some participants called for carrying out awareness sessions starting from school to public. This highlights the importance of incorporating such awareness programs in school curricular as well as targeted to public. In addition, evidence suggests that areas with strict licencing requirements for setting up a

retail operation for E-cigarette sales may have lower rates of youth initiation of E-cigarette use and conventional tobacco product use (APHA, 2020).

One of the key factors contributing to the rise in E-cigarette use among young adults has been identified as the products' accessibility. During the study, access methods that stood out included cost, convenience, and availability. According to the study's findings, vapes are widely available and used by young people. Young adults now have easy access to E-cigarettes due to their ease of purchase and availability and nonetheless, these vapes are convenient to use anywhere because they do not emit a strong tobacco odour and are easy to conceal from adults (Sapru et al., 2020). The majority of participants identified dedicated vape stores and individual sellers as the primary means of obtaining E-cigarettes. Because of the expanded E-cigarette market, E-cigarettes are more readily available and accessible. This study also found that, vapes are easily accessible and widely used by young people, in addition to appealing flavours, cost and convenience were also noted as important contributing factors. Participants stated that the fact that E-cigarettes are less expensive than regular cigarettes is another reason why people use them. The average annual cost of smoking regular cigarettes at a rate of one pack per day was \$2650, the average cost of smoking E-cigarettes (cartridge models) at the same rate, on the other hand, was around \$1000, stating, E-cigarettes are far less expensive than regular cigarettes (Sapru et al., 2020). Participants in this study also mentioned that these devices can be used in secrecy and are small enough to carry around without being noticed, making them more convenient and easier. Consistently, numerous studies have found similar findings related to appeal. E-cigarettes are user-friendly operation, appealing flavours, and the ability to be used discreetly in places where smoking is prohibited (Fadus et al., 2019). Also, in the study by Klesh et al. (2023) according to current and former E-cigarette users, E-cigarettes are more convenient than combustible tobacco, taste better than traditional cigarettes, and have less odour.

The study findings will be useful in community health awareness programmes to make the public more aware of the contributing factors, perceptions, and risks of using E-cigarettes so that they can participate in prevention efforts. A community-based action plans need to be made incorporation with all local law enforcement authorities, local council, schools and general public to make sure that the action plan is implemented. This study also unearthed that there are unauthorized sales of E-cigarettes and its products in the island. Which is an important matter that needs immediate attention of all local law enforcement authorities. Schools need to be more vigilant on making the students and parents aware of the risk factors of using E-cigarettes. Also, counsel students who are already using E-cigarettes to encourage them to stop using E-cigarettes.

Conclusion and Recommendation

The study was successful in exploring perception and influencing factors of E-cigarette use. Also, it identifies a number of factors based on their perception. Having friends who use E-cigarettes, as well as curiosity and sales exposure to E-cigarettes, are all important factors influencing young adults E-cigarette use. Such factors can guide the planning and implementing of prevention programs that focus on raising awareness about the harm of E-cigarette use. It is necessary to increase public awareness of the potential dangers of E-cigarettes and to reduce overall usage by improving relevant laws and regulations. The harm of these products necessitates a protective stance, one that assumes that a product is harmful rather than less harmful. The study findings would suggest that multifactorial prevention programs that consider social norms, public health, and incorporate efficient vaping cessation strategies from the start in schools would have better protective results. It is also important to comprehend how different regulation and incentive options might affect the epidemiologic trends of E-cigarette use. Further research in a larger population is necessary because the

scope of this study only covers a small portion of the population, preventing generalisation of the findings.

Limitations

Participant control over the content of the data collected is greater in qualitative research due to its open-ended nature. The results cannot therefore be objectively checked against the participant-stated scenarios. The sample population of the study is small, limited to a single island and also to a specific gender and age group. Therefore, the results of this study could not be used to generalize to the country as a whole. Also, there was a limited timeframe to conduct this study.

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The author declares that the work reported in this paper was not impacted by any known conflicting financial interests or personal connections.

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Appendix 1 – Questionnaire Guide

Questionnaire guide

Age:

Gender:

Research questions:

- What is the perception of E-cigarette use among young adults in H.Dh.Hanimaadhoo, Maldives?
- What are the influencing factors of E-cigarette use among young adults in H.Dh.Hanimaadhoo, Maldives?

Q1. (a) Do you have a history of vaping? If so, can you tell me how you started vaping?

Probe: How old were you, who were you with, where were you?

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.....
.....

Q1. (b). Where did you get it from?

Probe: Did you pay for it or someone gave it to you?

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.....
.....

Q2. What do you remember about your first experience of vaping?

Probe: what makes you continue using it?

.....
.....
.....

Q3. What do you think about vaping?

Probe: explore benefits such as, reduced harm, help quitting smoking tobacco,
explore taste and smell?

.....
.....
.....

Q4. How addictive do you think vaping is?

Probe: what makes you say that? What do you think about health hazards of vaping?
What are the pros and cons compare to smoking tobacco?

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.....
.....

Q5. What do you think are the factors driving young adults towards vaping?

Probe: explore factors such as peer pressure, health benefits, financial benefits,
social aspects.

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Appendix 2 – Participant Information Sheet



Participant Information Sheet

Title: Perception and Influencing Factors of E-Cigarette Use Among Young Adults in H.Dh.Hanimaadhoo, Maldives.

Dear participant,

You are invited to take part in research taking place at the University of the West of England, Bristol. It is funded by myself, Shaziya Mohamed. Before you decide whether to take part, it is important for you to understand why the study is being done and what it will involve. Please read the following information carefully and if you have any queries or would like more information please contact Shaziya Mohamed, Faculty of Health Sciences, University of the West of England, Bristol Shaziya2.Mohamed@live.uwe.ac.uk.

Name of the Researcher: Shaziya Mohamed (009609665694)

Name of the Supervisor: Ms. Anju Chandran (009609695781)

The research is looking at perception and Influencing factors of E-Cigarette use among young adults in H.Dh.Hanimaadhoo, Maldives. The research questions are:

- What is the perception of E-cigarette use among young adults in H.Dh.Hanimaadhoo, Maldives?
- What are the influencing factors of E-cigarette use among young adults in H.Dh.Hanimaadhoo, Maldives?

To help us answer these questions we will be conducting face to face interviews. The aim of the interviews will be to collect information that will be made anonymous.

The results of study will be analysed and used in a report made available on the University of the West of England's open repository and will also be made available in Villa college library. The anonymised results may also be used in conference papers and peer-reviewed academic papers.

As a student, I am interested in gaining information about your experience and views about E-Cigarette use among young adults. I will not be asking any questions not related to the mentioned topic. The purpose of the questions will be to gain information about your experiences and views about E-Cigarette use among young adults in H.Dh.Hanimaadhoo, Maldives.

It is not compulsory to take part in this research. It is up to you to decide whether or not you want to be involved. If you do decide to take part, you will be given a copy of this information sheet to keep and will be asked to sign a written consent form.

If you do decide to take part, you are able to withdraw from the research without giving a reason until the point at which your data is anonymised and can therefore no longer be traced back to you. This point will take place 3 days from the date you signed your consent form. If you want to withdraw from the study within this period, please write to Shaziya Mohamed, Shaziya2.Mohamed@live.uwe.ac.uk. Deciding not to take part or to withdrawal from the study does not have any penalty or effect in any means.

If you agree to take part, you will be asked to take part in Perception and Influencing Factors of E-Cigarette Use Among Young Adults in H.Dh.Hanimaadhoo, Maldives. This will be conducted by Shaziya Mohamed. The researcher is experienced in the subject matter and are sensitive to issues it may raise. The interview will take approximately 45 to 50 minutes. The interviewers can travel to preferred area. The subject and focus of the discussion will be Perception and Influencing Factors of E-Cigarette Use Among Young Adults in H.Dh.Hanimaadhoo, Maldives. Your answers will be fully anonymised.

Your interview will be recorded on a voice recorder, but the recording will not contain your name. A unique identifier will be used to re-identify you if you choose to withdraw from the study within the period. At the point of transcription, your voice recording will be deleted. Your data will be anonymised at this point and will be analysed with interview data from other anonymised participants.

We do not foresee or anticipate any significant risk to you in taking part in this study. If, however, you feel uncomfortable at any time you can ask for the interviewer to stop. If you need any support during or after the interview, then the researchers will be able to put you in touch with suitable support agencies. The research team are experienced in conducting research studies and are sensitive to the subject area. The interview has been designed with these considerations in mind.

All the information we receive from you will be treated in the strictest confidence.

All the information that you give will be kept confidential and anonymised at data entry. Hard copy research material will be kept in a locked and secure setting to which only the researchers will have access in accordance with the University's and the Data Protection Act 2018 and General Data Protection Regulation requirements.

Voice recordings will be destroyed securely immediately after anonymised transcription. Your anonymised data will be analysed together with other interview and file data, and we will ensure that there is no possibility of identification or re-identification from this point.

A Report will be written containing our research findings. This Report will be available on the University of the West of England's open-access Research Repository, and Villa College library.

A hard copy of the Report will be made available to all research participants if you would like to see it. Key findings will also be shared both within and outside the University of the West of England. Anonymous and non-identifying direct quotes may be used for publication and presentation purposes.

The project has been reviewed and approved by the Faculty of Health Sciences, University of the West of England University Research Ethics Committee, Villa ethical committee, ministry of health research committee, Republic of Maldives. Any comments, questions, or complaints about the ethical conduct of this study can be addressed to the Research Ethics Committee at the University of the West of England at: Researchethics@uwe.ac.uk

Concerns, queries or complaints will be handled by Ms. Anju Chandran in the first instance as she is the supervisor of this study.

If you would like any further information about the research, please contact in the first instance:

Name: Shaziya Mohamed

Professional address: Gahaa,
Aabaadhee Magu,
H.Dh. Hanimaadhoo,
Republic of Maldives

E mail address: Shaziya2.Mohamed@live.uwe.ac.uk.

Thank you for agreeing to take part in this study.

You will be given a copy of this Participant Information Sheet and your signed Consent Form to keep.

Name of the interviewer:

Signature:

Date:

Time:

Name of the participant:

Signature:

Date:

Time:

Appendix 3– Consent Form

Research Participant Consent Form

Title of Project: Perception and Influencing Factors of E-cigarette Use Among Young Adults in H.Dh.Hanimaadhoo, Maldives.

Name of Researcher: Shaziya Mohamed *(Circle as appropriate)*

➤ I confirm that I have read and understood the information sheet for the above research and what my contribution will be.

Yes	No
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➤ I have been given the opportunity to ask questions (face to face, via telephone and e-mail)

Yes	No
------------	-----------

➤ I agree to take part in the interview.

Yes	No	NA
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➤ I agree to the interview being tape recorded.

Yes	No	NA
------------	-----------	-----------

➤ I agree to digital images being taken during the research exercises.

Yes	No	NA
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➤ I understand that my participation is voluntary and that I can withdraw from the research at any time **without giving any reason**

Yes	No
------------	-----------

➤ **I agree to take part in the above study**

Yes	No
------------	-----------

Name of participant

Signature

Date

Name of researcher taking consent ...Shaziya Mohamed.....

Researchers e-mail address s2201739@students.villacollege.edu.gov.mv

Appendix 4 – Permission from Villa College

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



Villa College QI Campus, Rah Dhebai Hingun,
Male', Maldives

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www.villacollege.edu.mv

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ފަރާތުން، ރާއްޖޭގެ
ސަރުކާރުގެ ސަރުކާރު
ގެ ފަރާތުން، ރާއްޖޭގެ

7th March 2023

Ref No: VC/CPS/2023/E-007

ETHICS APPROVAL LETTER

Dear Shaziya Mohamed (S2201739, Master of Science in Nursing-UWE),

Regarding your application titled: "Perception and influencing factors of E-Cigarette use among young adults in H.dh Hanimaadhoo, Maldives".

Thank you for submitting your application for approval of ethics. I am pleased to confirm that the Ethics Approval Committee of Villa College has approved your research from the date of this approval letter with the following condition.

Condition(s):

- Approval from National Health Research Committee (NHRC) under the Ministry of Health, Maldives.

Please be informed that the approval is effective during a valid enrolment in your course.

Please ensure that you contact the ethics committee via cps@villacollege.edu.mv if there are any changes to your data collection. Please quote the reference number in any correspondence.

All the best with your research

Ibrahim Latheef, PhD

Dean, Center for Postgraduate Studies

Ethics Approval Committee,

Villa College, Maldives.

Email: cps@villacollege.edu.mv Phone: +960 330 3261

Appendix 5 – Permission from National Health Research Council

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ



National Health Research Council
Ministry of Health
Male'
Republic Of Maldives

06th June 2023

Shaziya Mohamed
Male'
Republic of Maldives

Approval of Research Proposal

Title of Study Proposal: Perception and influencing factors of e-cigarette use among young adults in H.dh. Hanimaadhoo, Maldives

Researcher: Shaziya Mohamed

Dear Shaziya Mohamed,

The members of the National Health Research Council have reviewed your research proposal "Perception and influencing factors of e-cigarette use among young adults in H.dh. Hanimaadhoo, Maldives". Following the review, the proposed study has been approved by the council.

The research registration number is NHRC/2023/13.

It is requested that the final report of the research and research abstract to be forwarded to the Ministry of Health for future reference and use. Please also note that researchers are required to submit a "Yearly Monitoring Form" to NHRC for review by NHRC on progress of researches conducted in Maldives.

Dr. Ahmed Ashraf
Chair of National Health Research Council (NHRC)

Appendix 6– Permission from Hanimaadhoo Council

**Secretariat of the Hanimaadhoo Council,
South Thiladhunmathi**

Hdh. Hanimaadhoo, Rep. of Maldives



Ref No: 258/PRIV/2023/27

Date: 09th March 2023

Dear Shaziya Mohamed,

With references to your letter (dated 09th March 2023), we have no object to conduct your research study on "Perception and Influencing Factors of E-Cigarette Use Among Young Adults" in Hanimaadhoo.

We wish you all the best to your studies.

Should you require any further assistance, please do not hesitate to contact us.

Thank you,

Ali Ibrahim
Council Member



Secretariat of Hanimaadhoo Council, South Thiladhunmathi,
Ameenee magu, HDh. Hanimaadhoo, Maldives
Email: info@hanimaadhoo.gov.mv
Phone: 4002064

Tables

Themes	Subthemes
Advantages and disadvantages	Health
	Smoking Cessation
Social influences	Society
	Peer pressure
	Friends
Psychological influences	Curiosity
	Perception
Contributing factors	Appeal
	Rules and regulation
Access	Cost
	Convenience
	Availability

Table 1: Themes and Subthemes

Figures

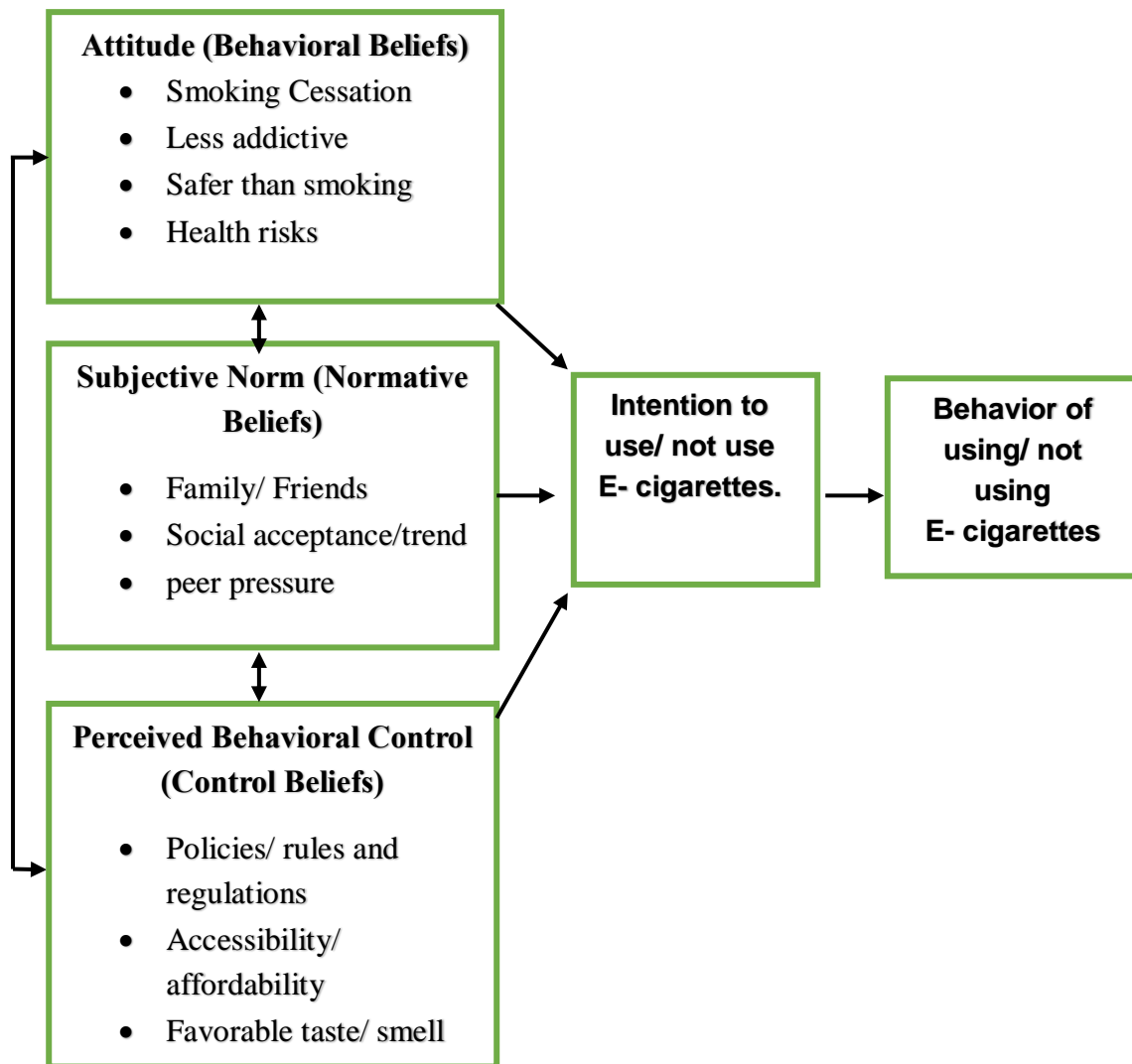


Figure 1: Conceptual Framework