

The Relationship Between Electronic Cigarette Smoking And Asthma And The Role Of Mental Health In This Relationship-A Systematic Literature Review

Raniya Abdo Refai, (corresponding author) King Fahad Central Hospital, nani91780@gmail.com

Dr. Mazhar Iqbal Bhatti (PhD Psychology), Assistant Professor, Department of Psychology, International Islamic University, Islamabad. ORCID: <https://orcid.org/0000-0002-2574-1994>

Ali Aali Alharbi, Erada & Mental Health Complex – Mental Services-Jeddah

Mohammed Mesfer Alharthi, Erada & Mental Health Complex – Mental Services-Jeddah

Bander Ghormallah Alzahrani, Erada & Mental Health Complex – Mental Services-Jeddah

Bandar Mohammed Hawsawi, Erada & Mental Health Complex – Mental Services-Jeddah

Mohammed Ahmed Alasiri, Erada & Mental Health Complex – Mental Services-Jeddah

Mohammad Yahya Alwdani, Erada & Mental Health Complex – Mental Services-Jeddah

Mohammad Abdurahman Mohammad Algarni, Erada & Mental Health Complex – Mental Services-Jeddah

Abdullah Abdulbadia Salem, Erada & Mental Health Complex – Mental Services-Jeddah

Fahad Mohammed Alqarni, Erada & Mental Health Complex – Mental Services-Jeddah

Abdulteef Mulfi Almuttairi, Erada & Mental Health Complex – Mental Services-Jeddah

Sayed Shahbal (Corresponding Author), Department of Psychology, International Islamic University, Islamabad, Pakistan. Email: syedshahabal@gmail.com. ORCID: <https://orcid.org/0000-0002-5383-491X>

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Abstract

Background: Electronic cigarettes first time were introduced in 5000 BC e in Europe. later, in 2003 by a Chinese scientist, Hon Lik invented similar phenomena of electronic cigarette in a new name of vaping. Vape affects the respiratory tract and becomes the cause of asthma among the smokers. role of Mental Health Cannot be overstated in this matter. it has its potential impression on the relationship.

Aim: The present literature review addresses the relational Linkage between the conception of electronic cigarettes the customer progression through the understanding of Mental Health among the smokers.

Method. Data was extracted from 2018 to 2022 from the reputed database including Google scholar, Emerald Insight, research Gate, PubMed, Medline, Taylor and Francis, and Springer link. All the data affiliated with and consulted to Scopus and web of science. Vos-viewer bibliometric assessment indicates the clusters form of data showing the results of authors, countries' journals, and keywords.

Result: Total number of articles obtained from the database is 105,421. after the proper screening process operationalized through the PRISMA 2020 Flowchart the qualitative data remain to 30 datasets.

Conclusion: Electronic cigarettes are carcinogenic to the health and cause wear damage to the lungs. this cause asthma among cigarette smokers and affects their mental health. Mental health affects the relationship between electronic cigarettes and asthma in a reversible manner.

Keywords: Electronic Cigarette Smoke, Vape, Asthma, Pulmonary Breathing Issues, Mental Health, Psychological Health.

Introduction

Smoking has become an evitable issue worldwide and is among the most important and burning topics to analyze (Alcántara et al., 2022). Consumption of combustible cigarettes is immensely popular and extensively used in the past (Lippi et al., 2020). Tobacco cigarettes dated back to 5000 BC of shamanistic rituals in the Americas. Later in the 16th century, Europe evolved the structure of the old, dated tobacco cigarette into a structure. In 10-century advancement in tobacco consumption resulted in a form of cigars (Veerasha et al., 2019). Later, with the advancement of combustible cigarettes results in the flavor being smokeless and potentially less harmful (Rodríguez Muñoz et al., 2019).

Previously easy availability of flavored tobacco cigarettes causes proportionality of the youth consumption of such tobacco products it affects the youth's psychological, social, and personal domain of life (Serrano-Alarcón et al., 2019). The most obvious consequence is related to the rebellious nature of the youth. Different drug consumption campaign has been introduced in the latest sanctuaries to avoid the use of tobacco and other associated drugs (Giulietti et al., 2020).

Hon Lik introduce the new form of tobacco cigarette and the true transformation into electronic devices in 2003. Dated back to the 1963 naked teen aerosols developed by different tobacco companies. All these innovations were related to completing the need of time. Therefore, electronic cigarettes evolved first in 1963 and were later officially introduced to societies in 2003 by a Chinese scientist. Electronic cigarette electronic cigarettes are also known as e-cigarettes nowadays termed vape (Kozlowski, 2021). Electronic cigarettes generate the fumes of nicotine amalgamated with the flavor used for inhalation and alternative to the traditional pipe cigarette (Janssen et al., 2020).

Most electronic cigarettes and vape use nicotine as a core component along with the flavor. Nicotine is a harmful and carcinogenic substance that causes serious injuries to the lungs and central nervous system (Mixdam et al., 2020). It is denoted as the addictive substance of the traditional as well as an electronic cigarette that results in heavy metal inhalation, cadmium, and lead the position in the nasal and buccal cavity that later, affect the alveolar structure of the lung (Thompson et al., 2019).

Tar, coal tar, cadmium, lead, and flavored component are inhaled through the buccal cavity into the nasopharyngeal pathway and get deposited into the alveolar ducts through the channel of bronchitis. These substances are heavier than air (Blank & Hoek, 2022). Therefore, inlet substances do not expel out through the acceleration process and get deposited in the alveolar ducts (Lee et al., 2022). These smoke particles do not exhale properly because of the mucous membrane that fuses the carbon monoxide, dust, and cadmium particle into the membrane of the alveolar duct. Later, supply the blood vessels to all parts of the body (Cheng et al., 2019).

These hindrances cars in appropriate breathing patterns and blockage of the chest cavity because of excessive mucus secretion. This results in too much breathlessness while sleeping, eating, and communicating (Kute et al., 2019). It results in faster breathing and heartbeat rate that cause confusion, exhaustion, drowsiness, and laziness in the patient causing blue lips and fingertips (Prochaska et al., 2020).

These circumstances are related to the thematic issues among smokers (Hulls et al., 2020). All the symptoms that are present in the electronic cigarette smoker are computer to the asthma problem (Tokle & Pedersen, 2019). The most important consequence is related to the identification of health decline among these

individuals. It, later, affects individual mortality (Denlinger-Apte et al., 2022). Moreover, the thought of mortality and among the chain smoker is quite common. This is because of their health conditions that affect the individual's mental state of mind (Stephens, 2019).

It is most observed that the patient who suffers from mental health problems usually in a defense mechanism (Taylor et al., 2021). Defense mechanisms are linked to the various activities that reduce the level of stress and enhance the feeling of pleasure (Loud et al., 2021). Especially the avoided behavior results in the excessive consumption of tobacco and electronic cigarette in their daily life (Richardson et al., 2019). Modernization is another perspective that is linked to the heavy consumption of electronic cigarettes (Lightfoot et al., 2020). Mental health is not only defined as the stability of the state of mind it is the provision of homogeneity, constructivism, and productive nature of the life scenario (Brose et al., 2020).

The present literature review manuscript synthesizes the empirical evidence regarding the consumption of electronic cigarette smoke to (a) Understand the effect on the lungs that result in the author and (b) the role of mental health. The basic agenda is to understand the consumption of electronic cigarette smoke based on the variety of mental health issues that physiologically presented the consequences of asthma among individuals. The study also addresses the heavy consumption of electronic cigarettes in a form of chain-smoking results into the different other health-related problems and mortality.

Material and method

The present literature review adopted the systematic literature review Formulating and constructing the research boundaries based on the device's mental stages on the systematic and

scientific perspective, replicability, and transparent constitution regarding the research scenario. The aim is to decrease and cut down the devices by operationalizing the research Publications, unpublished studies, and exhaustive bibliography. Therefore, Subsequent Construction of the Research question, the Prisoner indicated and reported the research articles and items for the meta-analysis and systematic literature review. Through this process, the methodology was operationalized and applied. The process of selection of references is founded upon four stages which include (1) Collection of data, (2) extraction of research papers, (3) screening of abstracts, and (4) Screening of full-text articles. The process of selection is explained through the utilization of the PRISMA flow diagram.

The present research is founded upon three distinct questions that are related to the construction of electronic cigarettes, asthma, and Mental health well-being. Questions of the present literature review include

Question 1: The relationship between electronic cigarette smoke and asthma

Question 2: The impact of electronic cigarette Smoke on summer development.

Question 3: To understand the role of Mental Health well-being in the relationship between electronic cigarettes and asthma.

Research engines that are used for systematic literature review include Google Chrome, Maxton, and Microsoft edge utilizing the databases of Google scholar, Emerald Insight, research Gate, PubMed, Medline, Taylor and Francis, and Springer link. All the data affiliated with and consulted to Scopus and web of science.

The methodology of the research was designed to formulate the syntax based on research

parameters. These syntaxes are made of keyboards and connected to each other through

the Boolean terms including the “or,” and “and.” Fever for the data search is presented in the table.

Table 1 Syntax

Variable	Boolean	Relation	Syntax
E-cigarette smoke Asthma Mental health role	And	“e-cigarette smoke” and “Asthma”	Syntax 1
		“e-cigarette smoke” and “mental health role”	Syntax 2
		“Asthma” and “mental health role”	Syntax 3
	Or	“e-cigarette smoke” or “Asthma”	Syntax 4
		“e-cigarette smoke” or “mental health role”	Syntax 5
		“Asthma” or “mental health role”	Syntax 6
		and	“e-cigarette smoke” “Asthma” and “mental health role”

Since the basic idea of LR is to understand electronic cigarette smoke’s injurious effect on health causing asthma and the role of mental health is based on the cross-sectional population.

This indicates that young, adult and all individuals were selected for this literature review.

Table 2 indicates the raw data

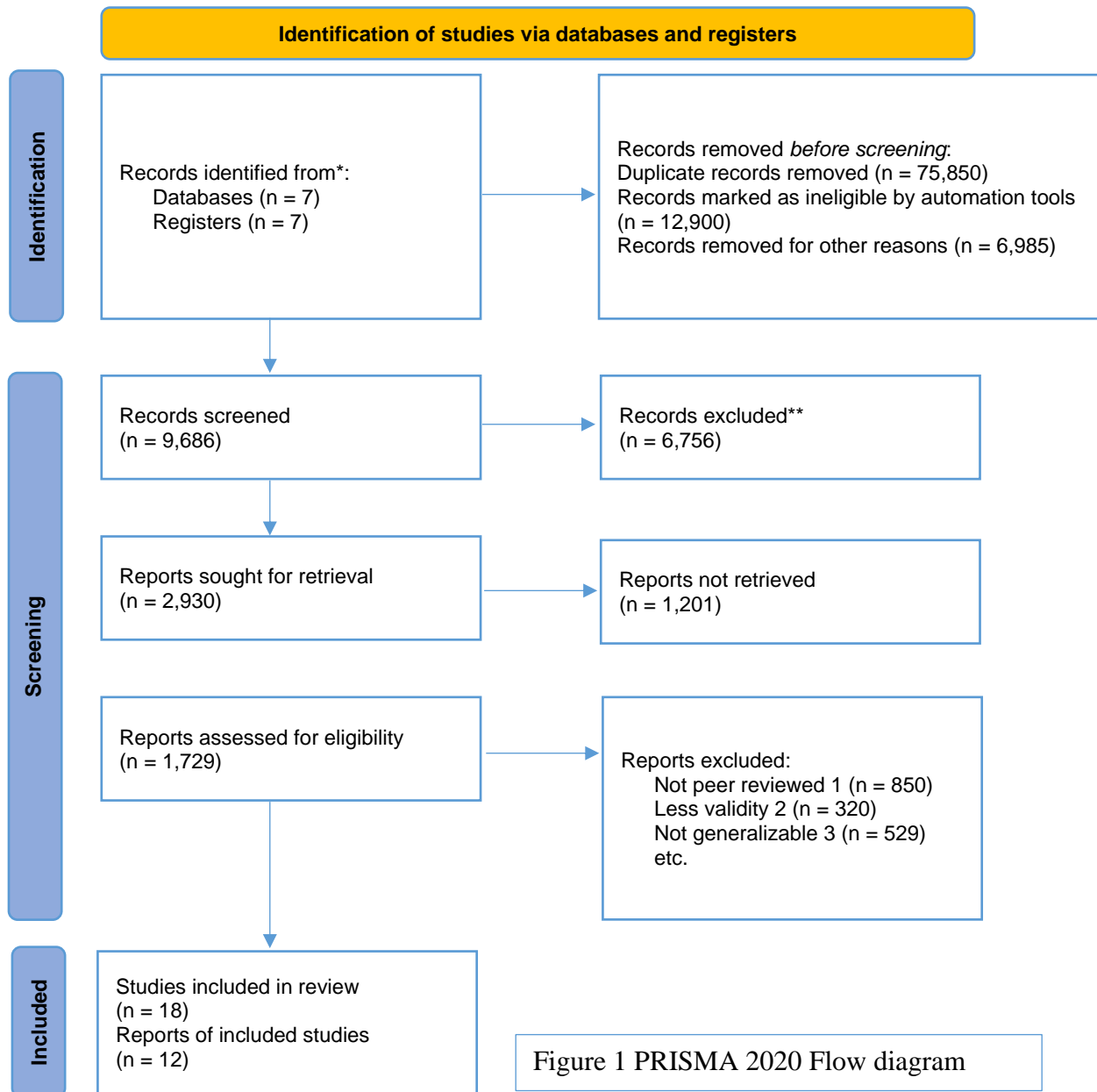
Databases	Year	Syntax	Total number
Google Scholar		Syntax 1	3,650
		Syntax 2	9,900
		Syntax 3	24,800
		Syntax 4	3,650
		Syntax 5	10,000
		Syntax 6	28,100
		Syntax 7	2,070
Emerald Insight,		Syntax 1	12,01
		Syntax 2	1,105
		Syntax 3	678
		Syntax 4	1,203
		Syntax 5	809
		Syntax 6	915
		Syntax 7	791
Research Gate,	2019 – 2022	Syntax 1	801
		Syntax 2	975
		Syntax 3	670
		Syntax 4	759
		Syntax 5	984
		Syntax 6	768
		Syntax 7	597
		Syntax 1	720

	Syntax 2	831
	Syntax 3	761
PubMed,	Syntax 4	791
	Syntax 5	489
	Syntax 6	871
	Syntax 7	673
	Syntax 1	365
	Syntax 2	301
	Syntax 3	291
Medline	Syntax 4	261
	Syntax 5	271
	Syntax 6	267
	Syntax 7	255
	Syntax 1	372
	Syntax 2	381
	Syntax 3	381
Taylor and Francis,	Syntax 4	229
	Syntax 5	291
	Syntax 6	261
	Syntax 7	247
	Syntax 1	301
	Syntax 2	381
	Syntax 3	349
Springer link	Syntax 4	299
	Syntax 5	264
	Syntax 6	295
	Syntax 7	238

Table 2 indicate the total number of studied obtained from each of the following databases utilizing the present syntax. The raw total number of articles was represented in the tables. Along with their year of publication. All the research material obtained from these databases is plenty in number. For each syntax, the databases have different numbers of articles. Cumulative numbers of articles for Google scholar, Emerald Insight, research Gate, PubMed, Medline, Taylor and Francis, and Springer link. The total numbers of articles for syntax 1 are 7,419, syntax 2 is 13,874, syntax 3 is 27,390, syntax 4 is 7,192,

syntax 5 is 13,098, syntax 6 is 31,477, and syntax 7 is 4,971. Then the total article was 105,421.

After the selection process limitation is linked to the identification of research is that not utilized in this study. Exclusion includes all the articles literature and journals that are not peer-reviewed and scientific. All must be written in the English language, understanding the potential relationship of electronic cigarette smoke to the customer progression and the role of mental health is presented. Article from these data resources is presented in the prisoner flowchart describing the overall extracted articles to the final selected articles.



Results from the PRISMA diagram indicate that the total number of articles from the 7 databases that are registered identified is 105,421. The record that is removed before the screening includes the duplication of record removal of 75,850, the record that is not eligible to incorporate in the study based on the automatic tool 12,900, and data that is removed from the other resources 6,985. During the process of screening record screen is 9,686, the record

excluded 6,756, the record sought for retrieval was 2,930, and the not retrieved data was 1,201. report for assessment of eligibility 1,729out of which the excluded based on the gray material 850, week validity 320, and generalizability 529. The total article remained for inclusion based on studies 18 and reports 12. The total number of literature remaining is 30 for the present literature review based on quality, and reliability. Generalizability, validity, and other psychometric

properties. Included material concentrated on the respected aim of the study for this literature review.

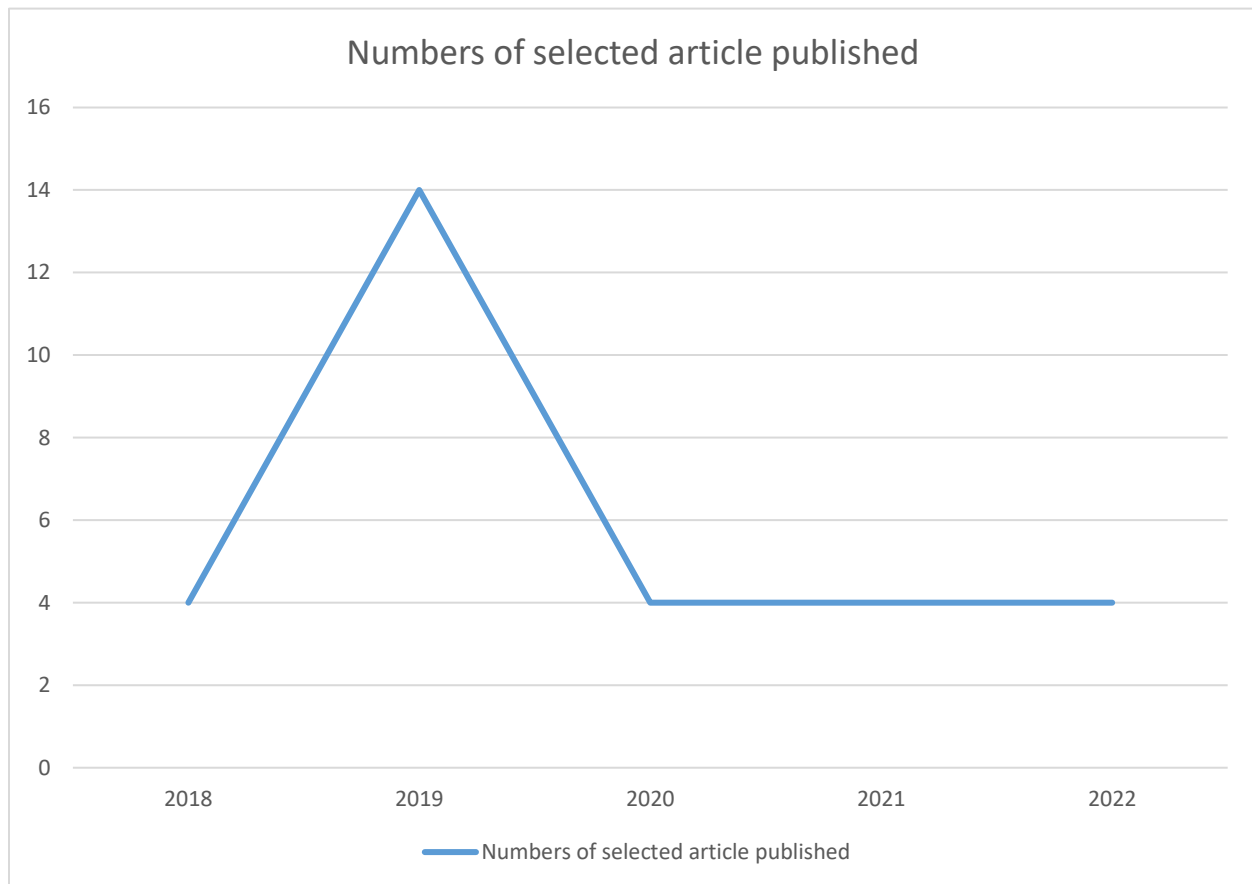
Illustration of the linkage between the major categorization related to the corresponding keyword that is linked to the trend author and country-based identification using the VOSviewer. It is a graphic tool that creates the network based on the mapping data for exploration and visualization of the related concerns about the literature review. set of items included in the map representation is designed as a cluster. please do not overlook the VOSviewer. There are certain items that do not belong to the collection appear to be segregated in the map.

Results

Literature analysis: trends and themes

Analysis of the themes and trends are based on the peer-reviewed documentation based on the topic of interest during the period of January 2018 to November 2022. The highest period of Peer reviewed manuscripts on a particular topic with variability in contribution. Trends indicate that from 2018 to 2020 majority of the article was published based on this interest which create a particular trending interest among the researchers.

Figure 2 Numbers of selected Published articles



Analyzing the research was particularly by the authors depicted that approximately 132 authors write about the topic of interest electronic

cigarette smoke, asthma, and mental health. The writers have published an article on this topic presented in the figure.

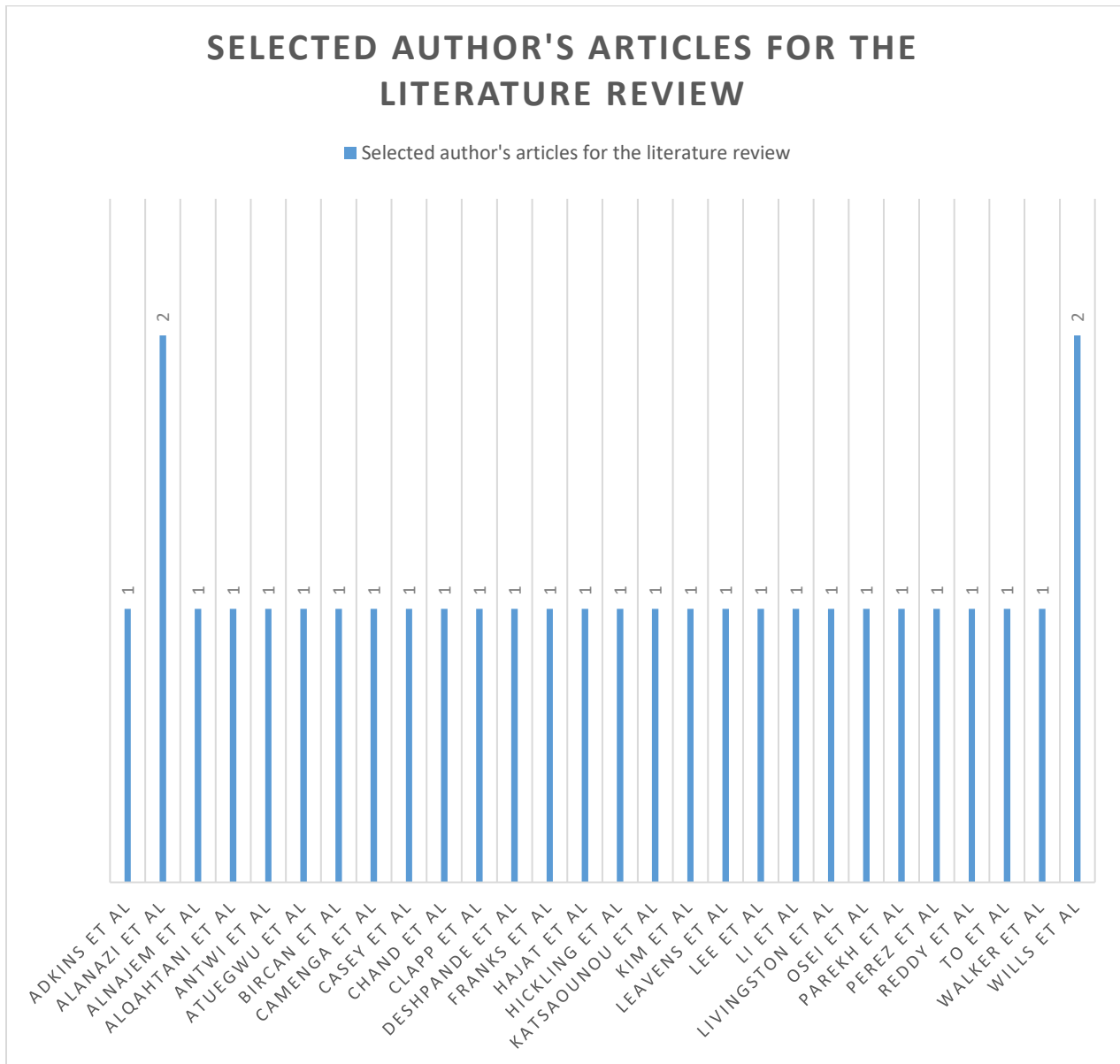


Figure 3 Selected authors articles for literature review

From the data of the journal, two articles were written most of the work related to the topic including the prevention of medicine and the American journal of respiratory diseases.

Whereas other articles were also important in this list that has identified different perspectives related to electronic cigarette smoke, asthma, the role of Mental health.

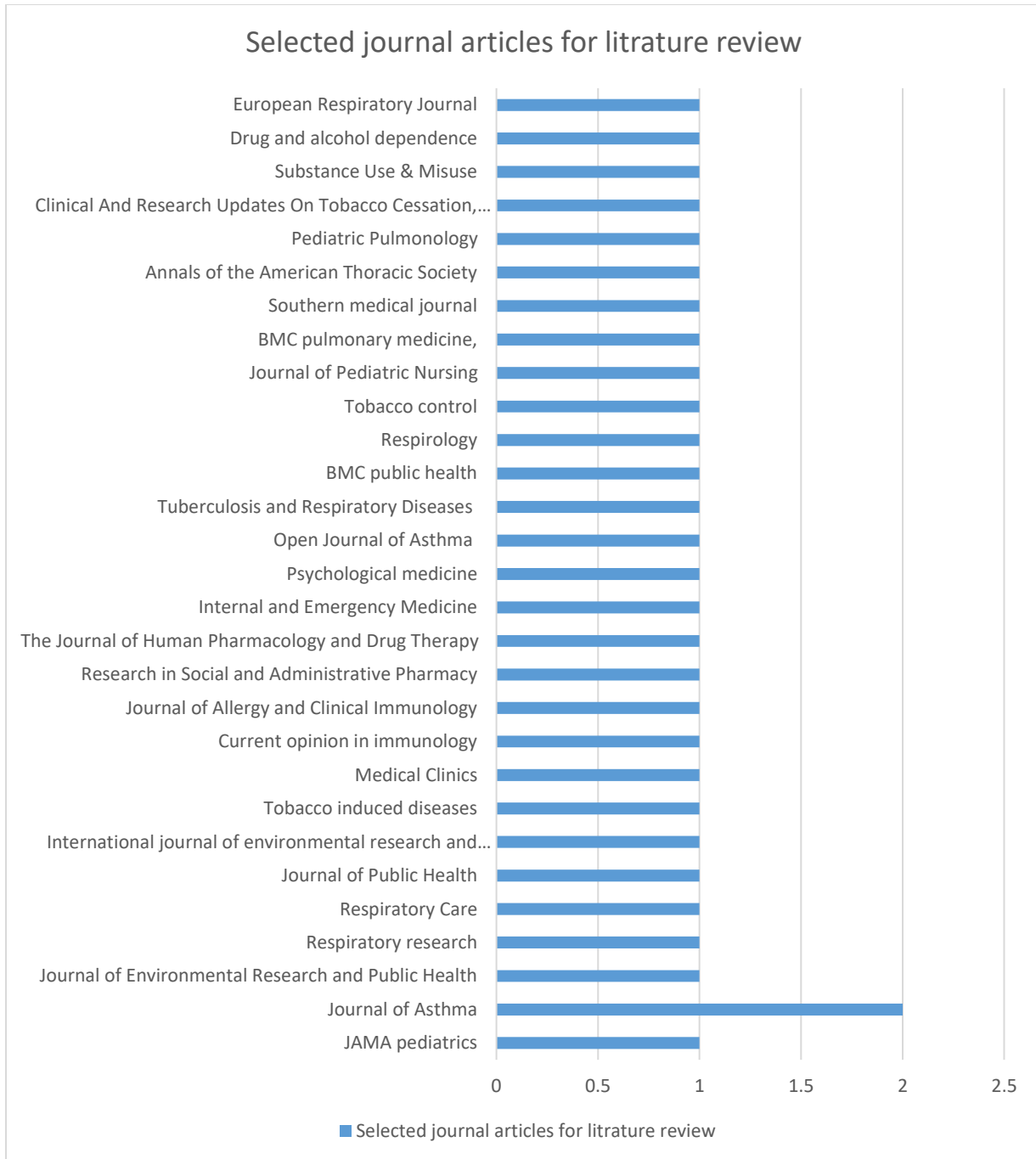


Figure 4 Selected journal articles for literature review

Analysis based on the country identifies the three distinct countries that are performing extra effort regarding electronic cigarette smoke, customer and mental health including the United States,

Australia, and China. It is also linked to the kingdom of Saudi Arabia, Italy, Japan, Hungary, Poland, Canada, Germany, etc.

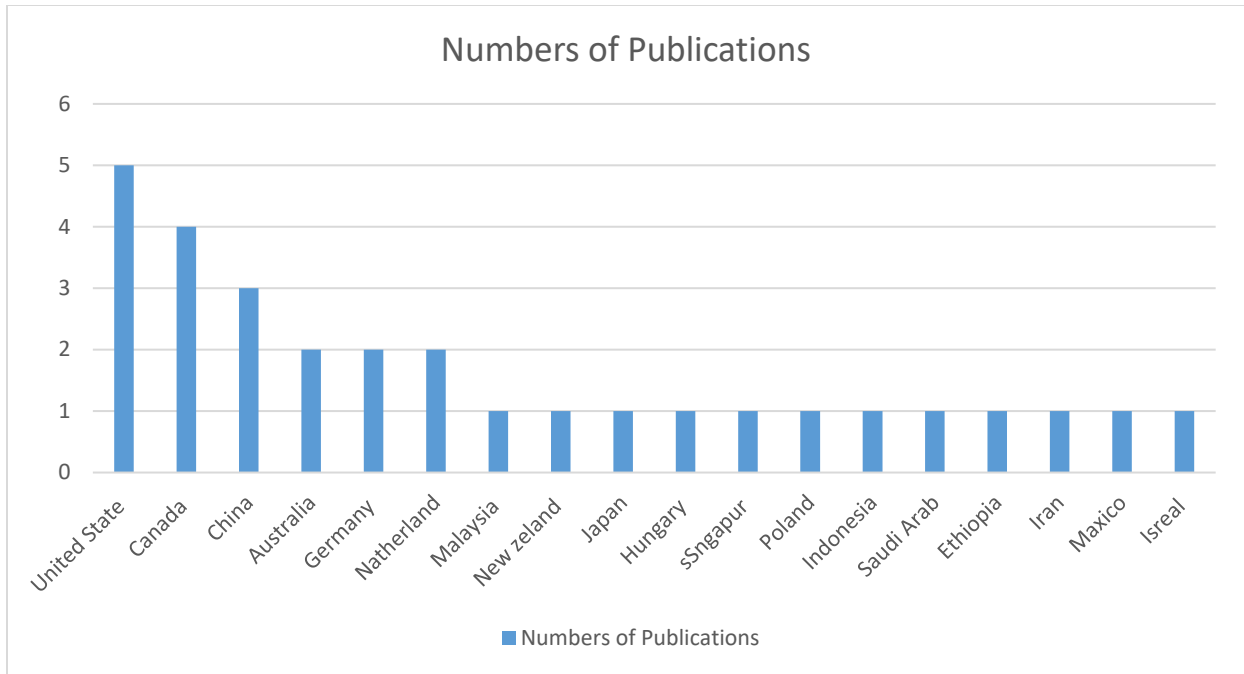
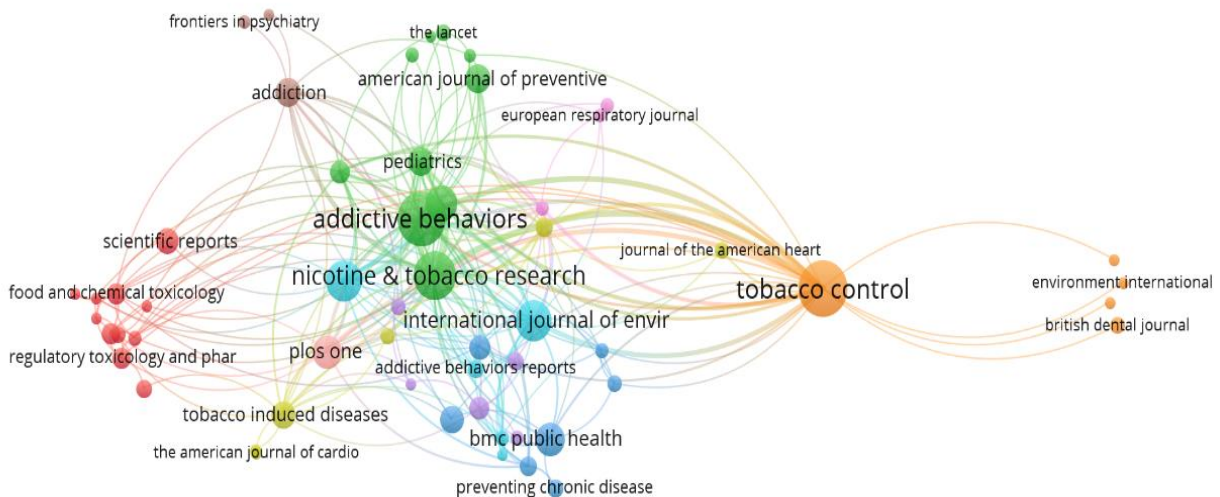


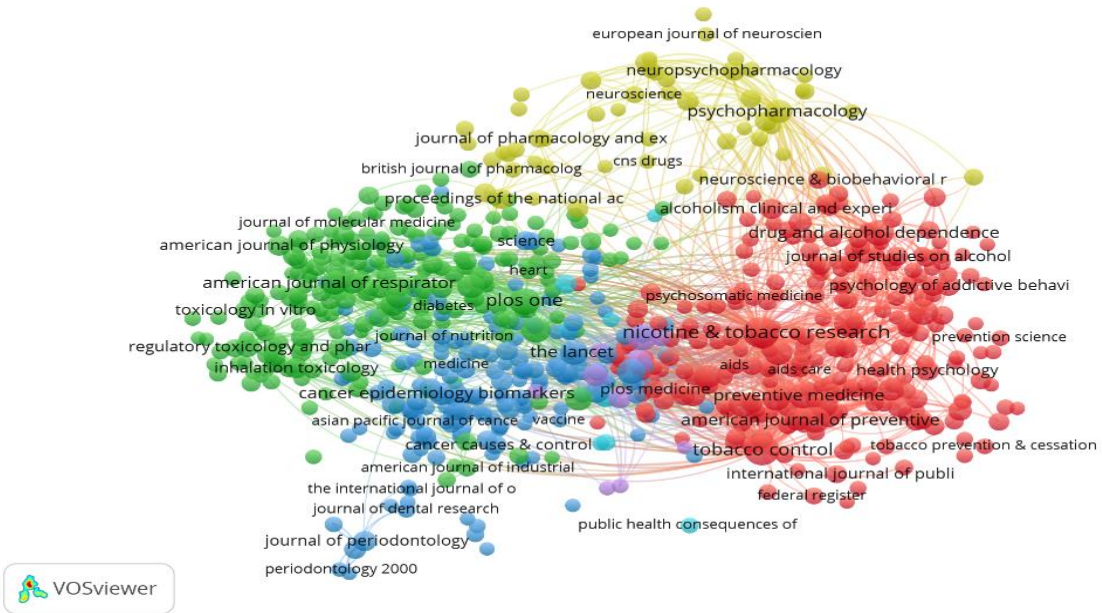
Figure 5 Numbers of publication of each author

Study based on the bibliometric display regarding Scientific evaluation and dynamics (Yu et al., 2020). The diplomatic results indicate that the scientific software of VOSviewer has the objectivity to identify the primary research keyword that is operationalized in the different studies regarding electronic cigarette smoke, asthma, and mental health (Shah et al., 2019). The primary keyword of this paper appears more than 5 times in the WOS core That is subjected to the software of VOSviewer (Xie et al., 2020). The most sucking keyword include Tobacco, tobacco

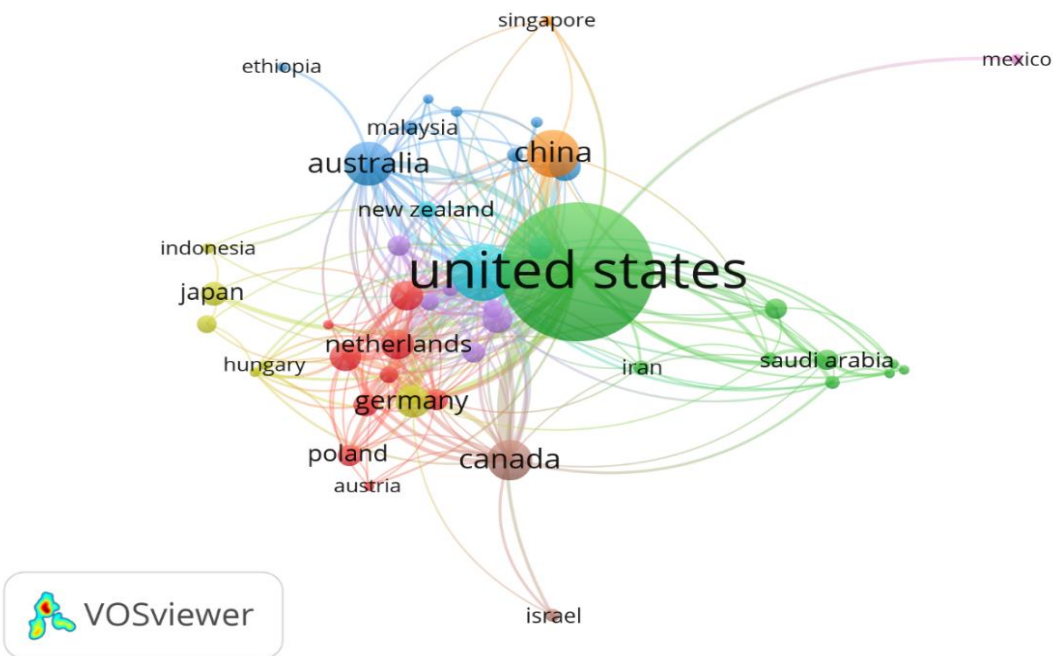
control, respiratory disorder, asthma, bronchitis and asthma, mental health, psychiatry, depression, etc. Node indicates the frequency and the strength of the keyword in the publication (Huang et al., 2020). The curvature structure between the nodes indicates the co-occurrence in the same and different researchers based on their Publication characteristics (Nandiyanto & Al Husaeni, 2021). Distance between the two nodes shows a greater amount of co-occurrence between the two words. It also indicates the confounding variable among these keywords.



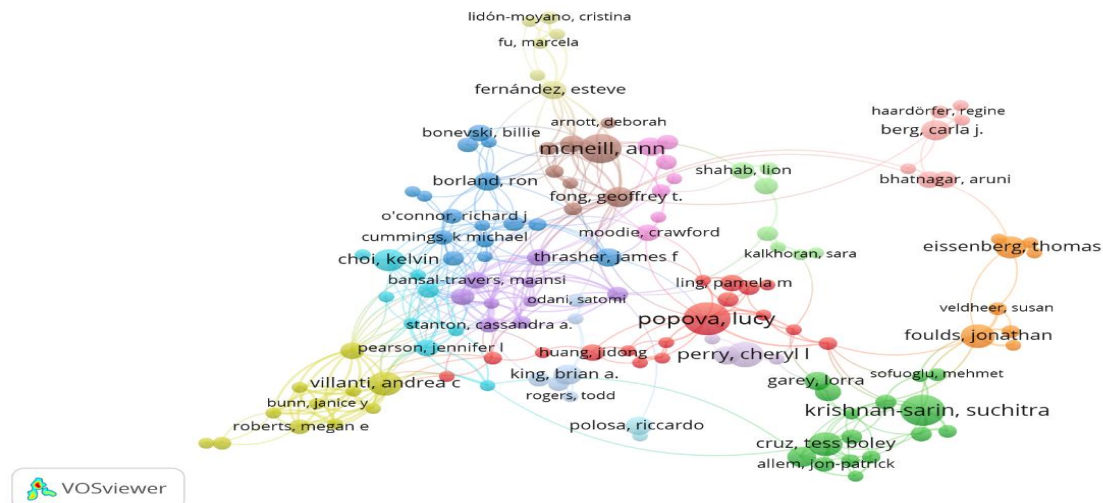
Vosviewer bibliometric assessment indicates the visual reference to the country-based research execution and participation in the scientific publications. The aim is to analyze the literature from the distinct countries that are presenting the quality paper to the journals and research objectives.



Vosviewer bibliometric Assessment for the journal base identification indicates a greater amount of regionally based journals takes part in scientific Publication regarding the understanding of electronic cigarette smoke in relation to the customer with the role of Mental Health.



Vosviewer bibliometric assessment provides the potential authors that take part in this domain of Publication regarding addiction, breathing disorders, and mental health. Trends indicate that number of variations can be seen with the variable research averting in the domain.



Discussion

In the discussion section, we have obtained insight from the previous literature about the relationship between electronic cigarette smoke and asthma and the role of mental health (Osei et al., 2019). The impact of the electronic cigarette on the earth summit was also assessed along with an understanding of the potential role of mental health in this relationship (Brett et al., 2021). Literature provides the five essential dimensions to be understood regarding the health problem and associated consequences (Fu et al., 2021). These dimensions include cigarettes among young adolescents, pulmonary and long injuries, mental health consequences, behavioral issues, and social problems among the user of the electronic cigarette (Wills et al., 2019).

Electronic cigarettes and asthma

Frames of electronic cigarettes are composed of varied materials including ultrafine nicotine particles and acetyl components that deeply into bronchitis and bronchiole's structure (Lee et al.,

2021). This eruption of the bronchioles results in heavy internal bleeding and ruptures the internal structure (Alanazi et al., 2022). This hinders the gaseous exchange and causes blockage and disturbance of the breathing rate (Bircan et al., 2021). A summer results in the heavy mucous lining of bronchitis that later causes swear health issues (Osei et al., 2019). Pulmonary health problems are one of the fundamental causes of electronic cigarettes that results in higher alveolar cancer, breakage, and iteration rate (Reddy et al., 2019).

Examination of the automatic patient results based on the inhalation of sticky substances in a form of refined liquid that results in the blockage of arterial structure (Livingston et al., 2022). Most often it is also linked to chronic disease that later affects the other body parts and affects the new logical coordination (Leavens et al., 2020). It is mostly observed that nicotine inhalation not only affects the lungs and the pulmonary system but is also comorbid with different other conditions of health (Adkins et al., 2020).

Role of Mental Health

Health is defined as stability in every domain of life. Cognition and mental Framework are linked to the neurological connection based on the neurotransmitters and hormonal conjugation (To et al., 2021). The most important perspective is to deal with the health decline among automatic patient who is frequent consumers of cigarettes (Antwi et al., 2022). Mental health is one of the most important and fundamental perspectives that is linked to the excessive consumption of cigarettes (Li et al., 2020). Cigarette in return is connected to nasopharyngeal health issues (Wills et al., 2019).

The role of mental health is an important perspective in understanding the etiological background of excessive cigarette smoke among patients with asthma (Franks et al., 2018). Well-being is a condition that is account for joy, happiness, and peace in life (Parekh et al., 2020). Decoration of mental health results in susceptible behavior and acceptable social rituals performed by the individual (Casey et al., 2020). It is the most vulnerable condition to understand the mental health of the patient that is regarding the excessive consumption of cigarettes and associated respiratory problems (Deshpande et al., 2020).

Electronic cigarettes among adolescence

The conception of electronic cigarettes is a fashion among young teenagers (Alanazi et al., 2020). Adolescents show rebellious behavior that causes the production of notorious behavior and unethical violation of the rules (Kotoulas et al., 2021). Adolescents show greater potential to work the conception of vaping because of peer pressure, unstructured behavior, and social influencers (Kim et al., 2020).

Electronic cigarette among adolescence is famous because of their sign of maturity and

adulthood (Alnajem et al., 2020). It results in various in-humanized behavior and a criminal tendency among adolescence that leads them to work with unethical behavior and criminal tendencies (Adkins et al., 2020).

Lung injuries

Electronic cigarette fumes penetrate the lungs through the windpipe and encounter the alveolar walls (Casey et al., 2020). This macromolecule entered the mucous membrane of alveoli and is submerged into the epithelial and endothelial surfaces that are in contact with the blood vessels (Deshpande et al., 2020). These blood vessels take the absorbent molecule to the former part of the lungs and cause the black lining of the alveolar ducts (Alqahtani et al., 2021). This is the injurious stage for the alveoli and results in the wounds bleeding and pus oozing out into the alveolar duct. This cause acute asthma among electronic cigarette smokers (Perez et al., 2019).

Electronic cigarette smoke is dense in fume that engulfs the healthier cell of the alveoli and converts them into damaged ones (Alnajem et al., 2020; Noshili et al., 2022). Excessive consumption of electronic cigarette smoke cast mental health issues among the patient. Atuegwu et al. (2021), stated that the link between electronic cigarette smoke and well-being is in relation to vice versa because both affect each other either in a directive or in-directive manner.

Mental health consequences

Mental health is necessary for every individual to lead a happy and stable life. Research prospective regarding the utilization of electronic cigarettes that impacts asthma causes several psychological disorders (Camenga & Tindle, 2018; Shahbal et al., 2022). It is also witnessed that mental health either affect the relationship of electronic cigarettes to asthma and electronic cigarette to estimate affect mental health. It is a two-way

process resulting in the bilateral identification of the relationship (Chand & Hosseinzadeh, 2020).

Majority of the time mental health is engulfed by the construction of electronic cigarettes that results in eczema (Wills et al., 2021). It causes depression, loneliness, discussion, sadness, and the feeling of grief. This, later, causes suicidal ideation among consumers because of excessive stress in their life that are perceived to be uncontrolled and bearable (Katsaounou et al., 2019).

Behavioral issues

Construction of electronic cigarettes false an enormous number of behavioral consequences that started from liquid-purified nicotine inhalation in a form of vape smoke (Hajat et al., 2021). The behavior of the consumer deviates from the normal path to completely abnormal fat with the passage of time (Hickling et al., 2019). This cause numerous psychological disorder specialists the mood disorder that includes depression, affective disorder, bipolar disorder, etc.

The prominent manifestation of the behavior can be seen through a reduction in impulse control behavior permanently (Walker & Christian, 2020). This elevates impulsivity, Aggression, and feeling of disgust. Behavioral changes are the most common manifestation of addiction that leads to uncivilized healthcare practices in numerous ways (Clapp et al., 2020; Shahbal et al., 2022; Batool et al., 2022).

Social issues

Social issues including economic issues, public health issues, social inequality, and work and occupational-related issues are studied from this perspective (Kim et al., 2021). Young teenagers utilize the vape as a component of social prestige, fashion, and sell- satisfaction (Adkins et al.,

2020). The most obvious component of the social issues is bonded with mental health disabilities. Social issues prevail in societies depending upon the construction, formulation, and management of the societies (Khan et al., 2020; Kwon & Park, 2020).

Limitation

Operationalization of the limited resources from the online database can cause threats to external validity and generalizability. Acquiring greater data from other resources can also help to understand the generalized phenomena of life regarding the topic of interest.

Future direction

Acquiring the data on the relational parameter of construction of electronic cigarettes and asthma with the role of mental health in this relationship. Several other cores found variables can also be utilized for further analysis of the literature review in this regard.

Conclusion Consumption of electronic cigarettes among the youth is a burning issue that is linked not only to physiological causes and harm. It is linked to biological, psychological, mental, social, and occupational domains of life (Hajat et al., 2021). Most often electronic cigarette affects the esophageal pathway and results in high mucus secretion into the alveolar duct (Alnajem et al., 2020). This is also linked to the mental health problem that provides a deeper understanding of the state of mind of the cigarette smoker (Parekh et al., 2020). Mental health is a condition that either negatively or positively affects the relational parameter of electronic cigarette smoke to asthma prevalence.

Conflict of interest: Authors have no conflict of interest.

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