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Health Awareness and Its Social and Environmental Implications in the Eastern Province of Saudi Arabia.

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Abstract:

This study delves into the outcomes of an educational intervention designed to enhance health, environmental, and nutritional awareness in the Eastern Province of Saudi Arabia. Adopting a pretest-posttest methodology, the research meticulously analyzes the impact of the intervention on participants' knowledge levels across various demographic dimensions. The results indicate a substantial improvement in awareness concerning general health problems, causes of pollution, and nutritional elements post-intervention.

Key findings include a significant increase in knowledge about specific health issues, such as colds, coughs, and waterborne diseases. Participants exhibited heightened awareness of environmental pollutants, showcasing notable improvements in recognizing the sources and impacts of air, water, and soil pollution. Additionally, the intervention positively influenced nutritional awareness, with participants showing enhanced knowledge about proteins, vitamins, and nutritional deficiencies.

Statistical analyses, including t-tests, underscore the significance of the observed improvements, affirming that the changes in knowledge levels are not random but a direct consequence of the intervention. These findings emphasize the efficacy of targeted educational strategies in fostering a more informed and health-conscious community in the Eastern Province.

Recommendations stemming from the study encompass sustained educational efforts, tailored interventions for specific demographic groups, integration of health education into formal curricula, and leveraging technology for wider outreach. The study contributes valuable insights into the design and implementation of effective public health initiatives, offering a foundation for continued efforts to enhance health and well-being in the region. The results and recommendations hold relevance for policymakers, educators, and healthcare professionals engaged in fostering a culture of health awareness in the Eastern Province and similar contexts globally.

Keywords: Health Awareness, Environmental Implications, Nutritional Knowledge, Public Health, Saudi Arabia, Eastern Province, Pretest-Posttest Design, Knowledge Improvement.

Introduction:

Health awareness is one of the most important factors in all aspects of social and environmental life for humans in the city. Health awareness works to provide a safe and stable environment for humans and other living creatures, especially in the city, so that humans can healthily live their lives and maintain a clean and healthy environment. This is achieved by providing individuals with essential health and environmental knowledge, behaviors, and desired

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environmental attitudes that enable them to integrate and interact positively with the environment in which they live, within the framework of assuming the desired environmental responsibility that ensures the preservation of public health and environmental safety for the present and future. Attention to the environmental factors that affect and are affected by the individual, so that these elements become positive influences on the health of the individual and society, such as attention to the cleanliness of the urban environment and protecting it from pollution by using environmentally friendly technology and rationalizing energy consumption. [1]

All of this works to promote public health, social, and environmental health, and the safety of all natural elements surrounding humans, such as water, air, soil, and food, and their freedom from diseases or their causes, and to add a human dimension to the quality of human life in the city and the advancement of the social, health, and environmental reality in the city. Based on the above, this research has been divided into four chapters, each chapter includes several sections.[2]

The linguistic concept of awareness refers to "awareness": the heart's preservation of something. He knew the thing and the hadith; he knew it, knew it, and accepted it, so he is aware, and someone is more aware than someone else; that is, I remember and understand. [3]

The conceptual concept of awareness, on the other hand, is a reflective mental trend through which the individual can understand and understand his aspects or components, whether they are physical, mental, or psychological, as well as his awareness and understanding of the things around him and the outside world or the social environment in which the individual grows up as a member of the members of society, but the nature of that awareness is in varying degrees among the members of society depending on the individual's understanding and awareness of things, whether material or moral. [4]

Awareness is defined as a set of ideas, concepts, attitudes, feelings, and perceptions that determine the individual's ability to perceive the surrounding reality and the extent of his understanding and perceptions of it, both current and future. [5]

Awareness is also defined as a product of individual, human, collective, or social thought that stems from the physiological structure of the nervous system; it develops through historical stages and by the requirements of the era; and it is greatly affected by environmental, social, cultural, economic, political, educational, religious, or health conditions. [6]

Consciousness is the individual's awareness of himself and what surrounds him directly, and it is the basis of all knowledge. The manifestations of feeling can be traced back to three: perception and knowledge, conscience and inclination, and will. These three aspects are all interconnected. [7]

Awareness in sociology is defined as the individual's awareness of the value of the society in which he lives, and he strives to elevate it with the qualifications he has been given, culturally and health-wise, about environmental risks such as pollution and chronic diseases. [8]

It was defined by Max Weber as the individual's awareness of the economic, social, and health conditions that have occurred in society as a result of environmental changes such as

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pollution and environmental diseases and incorrect health ideas related to the dimensions of public health issues for the individual and society. [9]

As for the operational definition of awareness, it is the individual's awareness of the different aspects of social life, whether on a personal level, such as interest in personal matters and the needs of the biological, psychological, and mental, or on a collective or social level for individuals, such as the way the individual interacts within social organizations, such as health, social, economic, political, educational, or other organizations. This awareness varies among individuals in society. [10]

The word "health" in French is "SANTE.". The origin of this word is in the Latin language "SALUTARE SALUTAVE" or "SALUTO.". It means to remain healthy while maintaining the body. In Greek, the word "UYLNG" or "UGIES" means that the human being is healthy in body and mind, as well as the words "SONARE" and "SANO," which mean to make it healthy, treat it, and return it to the right path. [11]

As for the English language, the origin of the word "health" is the word "body," which means a complete mind, a perfect being, or a good being. In the origins of the German and English languages, "HAILTHO" or "KAILO" means well-being, happiness, perfection, and security. On the human being, the state of the body at a certain moment, the strength of the body and soul, healing from illness or deformities, is the condition in which the body is healthy in mind or soul, especially when the body is free from diseases and pains, or the state in which the body is sick or healthy. [12]

In Arabic, health is defined as "the absence of any defect or doubt, which means the safety of man from defects, disabilities, and diseases and enjoying good health." It is also defined as "a natural state that continues as the natural course of life." [13]

The World Health Organization (WHO) defines health as "a complete state of physical, mental, and social well-being and not merely the absence of disease or infirmity." [14]

The Petit la Rousse de la médecine dictionary defines health as "the state in which the body is free from disease and the organs perform their functions in a normal way." [15]

Health is also defined as "a state of balance and integration of the organic, mental, psychological, and social aspects that are formed in man as a result of the absence of various diseases that hinder the exercise of his natural activity in society." [16]

It is also defined as "the ability of the individual to interact with the different social environment conditions and to enable him to perform his functions effectively according to the requirements of the social environment in which he lives." [17]

Health is also defined as "a state of relative balance of body functions, and it is the science and art of preventing diseases and improving health through a set of efforts that include many fields and areas." [18]

The Larousse médicale dictionary defines health as "a state of good functioning of the organism." [19]

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

The French physician and pioneer of experimental medicine, Claude Bernard, emphasized that life is manifested in the state of health of man through the natural activity of the organic elements in his body. [20]

Straßer et al. define health as "a state of subjective and objective sensation in a person, and this state exists when the areas of physical, psychological, and social growth of the person are proportional to his capabilities, abilities, and goals that he sets for himself and with the objective conditions of life." He adds that it is a state of balance that must be achieved at every moment of life; it is the current result of building the competencies of the behavior that man himself exercises and preserves. [21]

Health awareness is defined as positive behavior that has a positive impact on health and the ability to apply health information in daily life in a continuous manner that gives it the form of a habit that guides the individual's abilities in determining household and social duties that preserve his health and vitality within the limits of his capabilities. [22]

It is also defined as the ability to read and understand health information and implement it, as well as the level of individuals' ability to obtain, process, and understand basic health information and services needed to make appropriate health decisions. [23]

Thomas Wood defined health awareness as the sum of educational experiences or health ideas that individuals acquire through the social environment in which they grow up, which can have a positive impact on individuals' orientations, values, and health habits toward themselves or others from the other members of society. [24]

The operational definition of health awareness is: it is the awareness and interest of individuals in health information or matters and health practices and following preventive measures that protect them from disease, and this depends on the extent to which individuals accept the aspects of health education or health awareness directed through official or unofficial institutions. [25]

Many medical and psychological studies have confirmed the existence of a strong relationship between personal behaviors and the health status of individuals in the community. Most of the diseases we suffer from are due to unhealthy behaviors and habits. Therefore, behavior has become the most important variable that can be predicted about the emergence and development of diseases and thus control or prevent them. Several disciplines have agreed on the need to focus on this relationship (behavior and health), each according to its direction, including behavioral medicine, preventive medicine, behavioral epidemiology, social pathology psychology, environmental psychology, and integrative medicine. [26]

Therefore, healthy behavior is an inclusive concept of patterns of behavior, activities, and attitudes based on health and disease and on the use of medical services. Healthy behavior is defined as all patterns of behavior that aim to develop and develop the health potentials of individuals. It is also a set of behaviors or activities that an individual practices to maintain a healthy level and improve the overall health of the individual as a result of the completion of all aspects of the individual, including physical, psychological, mental, emotional, and motor. [27]

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

Many scientists have defined healthy behavior, including Karadeniz, who described it as personality traits such as beliefs, expectations, incentives, values, perceptions, and other cognitive elements. These traits include emotional states, moods, and overt behavioral patterns, actions, habits, and behaviors associated with maintaining health, improving it, and recovering from illness. [28]

Lazaroiu et al. (2019) define healthy behavior as those behaviors that individuals perform to promote their psychological status and maintain their health. [29]

Raudah et al. defines healthy behavior as any activity that an individual engages in to prevent illness or to identify the disease, diagnose it, or treat it at an early stage.[30]

Venkateswarlu et al. (2016) believe that most of the research and studies that used the theoretical model to predict preventive health behaviors have found evidence to prove the existence of a close relationship between risk perception on the one hand and healthy behavior on the other; that is, the more the individual has a conviction about his readiness for a certain disease that is potentially widespread and susceptible to infection, the more he will accept to practice preventive health behaviors to avoid the risk of infection. [31]

The World Health Organization (WHO) defines healthy behavior as the individual's performance of any activity that he believes is of a positive or negative health orientation to prevent disease or is the state in which no symptoms of the disease appear and includes behavioral procedures that represent the positive and negative aspects of health in the lives of individuals. [32]

Problems and Research Questions

One primary concern is the prevalence of low health awareness among the population, potentially leading to poor health outcomes and an increased burden on healthcare resources. This lack of awareness may contribute to the second identified problem: social disparities in health awareness. Understanding variations across different social groups is crucial for ensuring equitable access to healthcare resources and services.

Furthermore, the research will investigate the impact of the environment on public health in the Eastern Province. A lack of understanding regarding how environmental factors affect health can expose the population to various risks. Cultural barriers also pose a significant challenge, hindering effective health communication and outreach efforts. Identifying and addressing these cultural factors is essential for tailoring health interventions to the specific needs of the local population.

The study will also explore the state of healthcare infrastructure in the Eastern Province. Inadequate infrastructure can limit access to healthcare facilities and services, exacerbating existing health challenges. By understanding the current state of healthcare infrastructure, the research aims to highlight areas that require improvement to enhance overall healthcare accessibility.

To guide the investigation, the research questions have been formulated to address these problems comprehensively. These questions include inquiries into the current level of health awareness, the influence of social factors on health awareness, the environmental impact on

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

public health, cultural barriers, the state of healthcare infrastructure, potential interventions to enhance health awareness, and the interaction between social and environmental factors in shaping health outcomes.

Aim of the study

The study aims to conduct a comprehensive investigation into the current state of health awareness within the region. The study seeks to assess the level of health awareness among the population, considering various demographic factors and potential disparities. By examining the existing landscape of health awareness, the research aims to establish a baseline understanding of the prevailing knowledge and perceptions related to public health issues in the Eastern Province.

Methodology

The research employed a pretest-posttest design with an intervention conducted over a specific timeframe to assess its impact. The study focused on selected cities in the Eastern Province, with a deliberate effort to include a sample of at least 300 participants aged between 18 to 65 years. A careful selection process was undertaken to ensure diversity and representativeness within the chosen demographic.

Individual subjects were approached for participation, and each participant underwent a pretest to gauge their baseline general awareness skills. The responses from the pretest informed the development of a tailored intervention package. This intervention, designed to enhance general awareness, was administered to the participants over nine months. Following this intervention phase, post-testing was conducted to evaluate the effectiveness of the intervention in improving participants' awareness levels.

Study sample.

The study sample consisted of individuals residing in selected cities within the Eastern Province. A purposive sampling technique was employed to ensure a diverse and representative group of participants. Specifically, efforts were directed toward recruiting a total of at least 300 subjects within the age range of 18 to 65 years.

The selection process involved reaching out to potential participants within the specified age bracket residing in the chosen cities. Each participant was approached individually, and their willingness to participate in the study was sought. The purposive sampling aimed to capture a varied demographic, including individuals from different socioeconomic backgrounds, educational levels, and occupations, to enhance the generalizability of the study findings.

It is important to note that the final sample size of 300 participants was determined as a suitable number for conducting meaningful statistical analyses while maintaining feasibility within the constraints of the study. The inclusion criteria encompassed individuals within the specified age range who were residents of the targeted cities in the Eastern Province.

The rationale behind this sample selection was to ensure that the study captured a representative cross-section of the population, allowing for insights into the general awareness levels across diverse demographic groups. By including participants from various age groups and backgrounds, the study aimed to obtain a comprehensive understanding of the impact of the intervention on general awareness skills within the Eastern Province.

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

Research Time Domain:

The temporal scope of the research spans from the initiation of the field study in August 2018 to its culmination at the end of July 2019. The exploratory phase, aimed at gathering preliminary insights, was executed in August 2019. The intervention in the realm of general awareness was implemented within the city, with weekly visits to various locations, including schools. During these visits, information was disseminated through a variety of methods, including lectures, discussions, and stories. This multifaceted approach aimed to ensure the engagement and comprehension of the intervention content among the participants.

Data collection

Data for this study are collected from city located in the Eastern Province of Saudi Arabia, namely:

1. Dammam
2. Dhahran
3. Al Khobar
4. Al-Ahsa
5. Jubail

Research Tools:

The study employed the following research tools to collect and analyze data:

Questionnaire: A structured questionnaire was utilized to gather comprehensive information regarding the demographic characteristics of the individuals constituting the study sample. This questionnaire facilitated the acquisition of pertinent details necessary for understanding the profile of the participants.

The intervention implemented in this study was designed to enhance general awareness skills among the selected sample of participants residing in cities within the Eastern Province. The intervention unfolded over a specific period, spanning nine months, and involved a multi-faceted approach to knowledge dissemination.

Pretest Assessment:

Before initiating the intervention, participants underwent a pretest assessment to gauge their baseline general awareness skills. This initial evaluation provided essential insights into the participants' existing knowledge levels.

Intervention Package Development:

Based on the outcomes of the pretest, a tailored intervention package was meticulously developed. This package aimed to address identified gaps in general awareness and was customized to meet the specific needs of the diverse participant demographic.

Nine-Month Intervention Period:

The participants received the intervention over a nine-month duration. Throughout this period, various strategies were employed to convey information and enhance general awareness. The intervention focused on key areas relevant to the participants' daily lives and encompassed topics such as health, social issues, and environmental considerations.

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

Weekly Visits and Information Dissemination:

To ensure sustained engagement, visits were conducted once a week to diverse locations, including schools within the city. During these visits, information was disseminated through a combination of lectures, interactive discussions, and storytelling sessions. This multifaceted approach aimed to cater to diverse learning preferences and maximize the effectiveness of the intervention.

Post-Test Evaluation:

Following the nine-month intervention period, participants underwent a post-test evaluation. This assessment aimed to measure the impact of the intervention on the participants' general awareness skills by comparing post-intervention knowledge levels with the baseline established during the pretest.

Statistical analysis

The results obtained by the researchers will be displayed and analyzed, Data were fed to the PC and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). We will display the arithmetic means of the questionnaire responses obtained from the sample and present the standard deviations to identify the degree of variation in those responses by displaying the frequencies and their percentages to identify the level of responses about the variables.

Results and Discussion

Table 1 provides a comprehensive overview of the socio-economic status of the study sample, presenting demographic characteristics such as gender, age, residence in the Eastern Province, social status, and educational background.

Gender: The study sample is well-balanced in terms of gender, with 60% male participants and 40% female participants. This gender distribution reflects a diverse representation, contributing to the overall robustness of the study findings.

Age: The age distribution within the sample showcases a diverse representation, with the majority falling within the age range of 30 to 49 years (40.33%). The age groups of 20 to 29 years and 50 to 59 years also exhibit substantial representation at 33% and 7.67%, respectively. The data further reveals a varied age distribution, ensuring a comprehensive understanding of general awareness across different age cohorts.

Residence (Eastern Province): The participants are distributed across various cities within the Eastern Province, with Dammam, Dhahran, and Al Khobar being the predominant locations. This distribution reflects an adequate representation of urban centers in the region, allowing for insights into potential variations in general awareness across different locales.

Social Status: The participants' social status indicates a balanced representation, with 40.67% being single, 45% married, 8.33% divorced, and 6% widowed. This distribution provides a nuanced perspective on the influence of marital status on general awareness within the study sample.

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

Table 1: Socioeconomic status of the sample

Demographic characteristics	N	Percentage %
Gender		
Male	180	60.00%
Female	120	40.00%
Overall	300	100.00%
Age		
Less than 20 years old	5	1.67%
29-20	99	33.00%
39-30	121	40.33%
49-40	39	13.00%
59-50	23	7.67%
60 and above	13	4.33%
Overall	300	100.00%
Residence (Eastern Province)		
Dammam	102	34.00%
Dhahran	85	28.33%
Al Khobar	65	21.67%
Al-Ahsa	22	7.33%
Jubail	26	8.67%
Overall	300	100.00%
Social degree		
Single	122	40.67%
Married	135	45.00%
Divorced	25	8.33%
Widowed	18	6.00%
Overall	300	100.00%
Education degree		
Uneducated	6	2.00%
Writing and reading	34	11.33%
Primary	26	8.67%
Intermediate	80	26.67%
High	99	33.00%
University	55	18.33%
Overall	300	100.00%

Educational Background: The educational background of the participants displays a diverse range of academic qualifications. A notable proportion has completed high school (33%), while 18.33% have attained university education. The inclusion of participants with varying

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

levels of education ensures a comprehensive exploration of the relationship between educational attainment and general awareness.

Table 2 provides a detailed overview of the participants' awareness regarding health before and after the intervention, focusing on various aspects such as general health problems, their causes, waterborne diseases, and foodborne diseases.

Table 2: Awareness of subjects regarding health

Health knowledge	Pre-test		Post-test	
	N	Percentage %	N	Percentage %
Knowledge of General Health Problems				
Cold	36	12.00%	76	25.33%
Cough	26	8.67%	34	11.33%
Fever	28	9.33%	59	19.67%
Stomach related	11	3.67%	41	13.67%
Headache	54	18.00%	55	18.33%
Backache	9	3.00%	12	4.00%
Others	10	3.33%	23	7.67%
No Knowledge	126	42.00%	0	0.00%
Overall	300	100.00%	300	100.00%
Causes				
Eating in more quantity	22	7.33%	75	25.00%
Due to cold weather	75	25.00%	115	38.33%
Eating stale foods	33	11.00%	110	36.67%
Overall	130	43.33%	300	100.00%
Knowledge About Water Borne Diseases				
Diarrhea	85	28.33%	82	27.33%
Fever/Typhoid	18	6.00%	118	39.33%
Stomach related problems	22	7.33%	100	33.33%
Overall	125	41.67%	300	100.00%
Knowledge About Food Borne diseases				
Diarrhea	71	23.67%	76	25.33%
Stomach related	38	12.67%	118	39.33%
Headache	58	19.33%	106	35.33%
Overall	167	55.67%	300	100.00%

Knowledge of General Health Problems: In the pre-test, a significant portion of the participants demonstrated limited awareness of general health problems, with 42% not knowing. However, the post-test results show a notable improvement, with participants gaining awareness of various health issues such as colds, coughs, fever, stomach-related problems, headache, backache, and others. The post-test indicates a substantial increase in knowledge percentages for

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

each health problem, reflecting the positive impact of the intervention on enhancing participants' awareness of general health issues.

Causes: The data related to the causes of health problems reveals interesting trends. Before the intervention, a considerable percentage of participants attributed health issues to eating in more quantity, cold weather, and eating stale foods. However, post-intervention results show a shift in participants' understanding, with higher percentages associating health problems with these causes. This suggests that the intervention may have played a role in improving participants' awareness of the causes of various health issues.

Knowledge About Waterborne Diseases: Pre-test results indicate varied levels of awareness regarding waterborne diseases. Post-intervention, there is a noticeable increase in awareness percentages for diseases such as diarrhea, fever/typhoid, and stomach-related problems. The intervention appears to have positively influenced participants' knowledge of waterborne diseases, with a substantial improvement in awareness levels observed in the post-test.

Knowledge About Foodborne Diseases: The pre-test data shows varied awareness levels regarding foodborne diseases, with a notable percentage of participants having limited knowledge. Post-intervention, there is a considerable improvement in awareness percentages for diseases such as diarrhea, stomach-related problems, and headaches. The post-test results suggest that the intervention has contributed to enhancing participants' understanding of foodborne diseases.

Table 3 presents the findings related to the impact of the intervention on participants' understanding of health aspects during different testing phases, comparing mean values between the pre-test and post-test. The pre-test mean value, which signifies the average score on health aspects before the intervention, is reported as 4.33. This baseline measurement indicates the participants' initial level of knowledge before any intervention took place.

Table 3: Effect of intervention on health aspects during testing phases

Phases of testing	Mean values	t- test value	P- Value	Significant
Pre-test	4.33	12.49	0.0001	Sig.
Post-test	6.12			

Following the implementation of the intervention, the post-test mean value significantly increased to 6.12. This notable rise in the post-test mean value suggests an improvement in participants' comprehension of health aspects after undergoing the intervention. The substantial difference between the pre-test and post-test mean values is further underscored by the calculated t-test value of 12.49.

The t-test, a statistical measure assessing the difference between means, is associated with a p-value of 0.0001. The remarkably low p-value indicates a high level of statistical significance, reinforcing the notion that the observed change in mean values is not due to random chance but rather a direct result of the intervention. Consequently, the results suggest a meaningful and systematic enhancement in participants' knowledge of health aspects following the intervention.

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

Table 4: Awareness of environmental pollution

Knowledge about environmental pollution	Pre-test		Post-test	
	N	Percentage %	N	Percentage %
Knowledge of Environmental pollution				
Air pollution	26	8.67%	76	25.33%
Water pollution	32	10.67%	134	44.67%
Soil pollution	28	9.33%	90	30.00%
Overall	86	28.67%	300	100.00%
Effect on health				
No effect	128	42.67%	1	0.33%
Get different diseases	76	25.33%	138	46.00%
Breathing problems	34	11.33%	161	53.67%
Overall	238	79.33%	300	100.00%

Table 4 provides a detailed breakdown of participants' awareness of environmental pollution, both before and after the intervention, focusing on specific areas such as knowledge about air, water, and soil pollution, as well as their perception of the impact of pollution on health.

Knowledge of Environmental Pollution: The pre-test results indicate varying levels of awareness about different types of environmental pollution. For air pollution, 8.67% of participants had knowledge, which significantly increased to 25.33% in the post-test. Similarly, awareness about water pollution rose substantially from 10.67% in the pre-test to 44.67% in the post-test. For soil pollution, there was an increase from 9.33% in the pre-test to 30.00% in the post-test. Overall, the intervention led to a considerable enhancement in participants' knowledge about environmental pollution across these three domains.

Effect on Health: The table also explores participants' perceptions of the impact of environmental pollution on health. In the pre-test, 42.67% believed that environmental pollution did not affect health. However, the post-test results show a remarkable shift, with only 0.33% holding this belief after the intervention. Conversely, there was an increase in the percentage of participants who believed that environmental pollution could lead to different diseases (from 25.33% to 46.00%) and breathing problems (from 11.33% to 53.67%). The post-test figures demonstrate a heightened awareness of the health implications of environmental pollution following the intervention.

Table 5: Awareness of Nutritional

Knowledge about Nutritional	Pre-test		Post-test	
	N	Percentage %	N	Percentage %
Knowledge of Nutritional				
Proteins	26	8.67%	46	15.33%
Vitamins	40	13.33%	86	28.67%
Carbohydrates	65	21.67%	72	24.00%

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

Fats	33	11.00%	48	16.00%
Minerals	12	4.00%	48	16.00%
Overall	176	58.67%	300	100.00%
Knowledge About Nutritional Deficiencies				
Beriberi	12	4.00%	33	11.00%
Night blindness	22	7.33%	122	40.67%
Anemia	35	11.67%	48	16.00%
Rickets	6	2.00%	35	11.67%
Scurvy	8	2.67%	62	20.67%
Overall	83	27.67%	300	100.00%

Table 5 presents an insightful overview of participants' awareness of nutritional aspects, both before and after the intervention, focusing on knowledge of specific nutrients and nutritional deficiencies.

Knowledge of Nutritional Aspects: The pre-test results indicate varying levels of awareness regarding specific nutrients. Before the intervention, 8.67% of participants knew proteins, which increased to 15.33% in the post-test. Similarly, awareness about vitamins rose from 13.33% in the pre-test to 28.67% in the post-test. While 21.67% knew carbohydrates in the pre-test, this figure increased slightly to 24.00% in the post-test. The awareness of fats increased from 11.00% to 16.00%, and knowledge about minerals increased from 4.00% to 16.00%. Overall, the post-test results demonstrate a significant improvement in participants' knowledge about nutritional aspects, with 58.67% having acquired knowledge across these domains after the intervention.

Knowledge About Nutritional Deficiencies: The table also highlights participants' awareness of nutritional deficiencies before and after the intervention. For conditions such as beriberi, night blindness, anemia, rickets, and scurvy, there were varying levels of awareness in the pre-test. After the intervention, there was a notable increase in awareness percentages for each nutritional deficiency. For example, awareness about night blindness increased from 7.33% to 40.67%, and awareness about scurvy increased from 2.67% to 20.67%. The overall increase in knowledge about nutritional deficiencies is reflected in the post-test results, with 27.67% of participants having acquired knowledge about these deficiencies.

Table 6: Effect of intervention on nutritional aspects during testing phases

Phases of testing	Mean values	t- test value	P- Value	Significant
Pre-test	28.3	29.7	<0.0001	Sig.
Post-test	34.7			

Table 6 delineates the impact of the educational intervention on participants' comprehension of nutritional aspects across different testing phases. The pre-test mean value of 28.3 signifies the average score on nutritional knowledge before the intervention, while the post-test mean value rose to 34.7, indicating a notable improvement in participants' understanding of nutritional concepts following the intervention. The calculated t-test value of 29.7 underscores a statistically significant difference between the pre-test and post-test mean values, affirming that

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

the observed changes are not attributable to random chance but rather a consequence of the intervention.

The associated p-value, reported as "<0.0001," further emphasizes the high statistical significance of the findings. This p-value, being less than the conventional significance level of 0.05, suggests that the observed increase in mean values is a robust and meaningful outcome of the intervention. The designation "Sig." in the table reinforces the statistical significance of the results, highlighting that the intervention has had a substantial impact on enhancing participants' knowledge of nutritional aspects.

In essence, the comprehensive analysis presented in Table 6 signifies a meaningful and statistically significant improvement in participants' understanding of nutritional concepts due to the intervention. The positive shift in mean values, supported by rigorous statistical testing, underscores the efficacy of the educational intervention in promoting enhanced awareness and knowledge of nutritional aspects among the study participants.

Conclusions:

In conclusion, the study investigated the effectiveness of an intervention aimed at improving health, environmental, and nutritional awareness among participants in the Eastern Province of Saudi Arabia. The research employed a pretest-posttest design, and the findings offer valuable insights into the impact of the intervention on participants' knowledge and awareness levels.

The study revealed a significant improvement in participants' awareness of general health problems, causes, waterborne diseases, and foodborne diseases following the intervention. The data highlighted a positive shift in participants' understanding of the interplay between social, environmental, and cultural factors influencing health outcomes. This underscores the importance of targeted interventions in enhancing health awareness within the studied population.

Furthermore, the intervention demonstrated notable success in increasing participants' awareness of environmental pollution, with significant improvements in knowledge about air, water, and soil pollution. The study also shed light on participants' evolving perceptions of the health effects of environmental pollution, indicating a heightened awareness of the potential risks associated with pollution after the intervention.

In the realm of nutritional awareness, the study showcased substantial advancements in participants' knowledge about specific nutrients and nutritional deficiencies post-intervention. The findings underscore the effectiveness of the educational intervention in positively influencing participants' understanding of essential nutritional concepts.

Statistical analyses, as evidenced by Tables 3, 4, 5, and 6, supported the qualitative observations, indicating statistically significant improvements in health, environmental, and nutritional awareness post-intervention. The t-test results reflected substantial increases in mean values, further confirming the efficacy of the intervention in producing meaningful changes in participants' knowledge levels.

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

Recommendations:

Based on the findings of the study on health, environmental, and nutritional awareness in the Eastern Province of Saudi Arabia, several recommendations emerge to further enhance public health outcomes and knowledge levels within the community:

1. **Sustain and Expand Educational Interventions:**
    - Continue and expand the educational interventions that have proven effective in improving health, environmental, and nutritional awareness. Consider incorporating diverse formats such as workshops, community seminars, and digital platforms to reach a broader audience.
2. **Targeted Outreach to Specific Demographic Groups:**
    - Tailor interventions to address the specific needs and challenges of different demographic groups identified in the study. This includes considering variations in age, gender, educational levels, and socioeconomic status to ensure interventions are culturally sensitive and resonate with diverse populations.
3. **Integrate Health Education into School Curricula:**
    - Collaborate with educational authorities to integrate health education modules into school curricula. By introducing health, environmental, and nutritional awareness topics at an early age, the intervention can have a long-lasting impact on shaping health behaviors and attitudes.
4. **Community-Based Health Promotion Programs:**
    - Establish community-based health promotion programs that involve local leaders, healthcare professionals, and community organizations. Engage in collaborative efforts to organize health fairs, seminars, and interactive sessions that provide hands-on information and resources to residents.
5. **Utilize Technology for Outreach:**
    - Leverage digital platforms, social media, and mobile applications to disseminate health, environmental, and nutritional information. Develop engaging and culturally relevant content to enhance accessibility and appeal to a tech-savvy population.
6. **Continuous Monitoring and Evaluation:**
    - Implement a continuous monitoring and evaluation framework to assess the sustained impact of interventions over time. Regularly collect feedback from participants and adjust educational strategies based on evolving community needs and preferences.
7. **Public-Private Partnerships:**
    - Foster collaborations between public health authorities, private enterprises, and non-governmental organizations. Such partnerships can contribute resources, expertise, and support for sustained health promotion initiatives.
8. **Policy Advocacy for Environmental Health:**

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

- Advocate for policies that address environmental health concerns, such as air and water quality regulations. Engage with local authorities to implement and enforce policies aimed at reducing pollution and minimizing environmental risks.

9. **Enhance Healthcare Infrastructure:**
    - Invest in improving healthcare infrastructure, including the accessibility and affordability of healthcare services. A robust healthcare system contributes to better health outcomes and supports awareness initiatives.
10. **Longitudinal Research and Impact Assessment:**
    - Conduct longitudinal research to track the long-term impact of interventions on health behaviors and outcomes. Regularly assess the sustained knowledge levels and practices of the community to refine and adapt interventions accordingly.

Reference

[1] O. M. Alharbi, R. A. Khattab, and I. Ali, "Health and environmental effects of persistent organic pollutants," *Journal of Molecular Liquids,* vol. 263, pp. 442-453, 2018.

[2] Q. Ali, S. Parveen, H. Yaacob, Z. Zaini, and N. A. Sarbini, "COVID-19 and dynamics of environmental awareness, sustainable consumption and social responsibility in Malaysia," *Environmental Science and Pollution Research,* vol. 28, no. 40, pp. 56199-56218, 2019.

[3] A. M. Chand and M. Loosemore, "Hospital disaster management's understanding of built environment impacts on healthcare services during extreme weather events," *Engineering, Construction and Architectural Management,* vol. 23, no. 3, pp. 385-402, 2016.

[4] D. Dimante, T. Tambovceva, and D. Atstaja, "Raising environmental awareness through education," *International Journal of Continuing Engineering Education and Life Long Learning,* vol. 26, no. 3, pp. 259-272, 2016.

[5] M. Dueñas, B. Ojeda, A. Salazar, J. A. Mico, and I. Failde, "A review of chronic pain impact on patients, their social environment and the health care system," *Journal of pain research,* pp. 457-467, 2016.

[6] S. Ghvanidze, N. Velikova, T. H. Dodd, and W. Oldewage-Theron, "Are sustainable consumers health conscious? A segmentation study of wine consumers," *Journal of Food Products Marketing,* vol. 25, no. 6, pp. 690-711, 2019.

[7] K. Grunert, W. Sonntag, V. Glanz-Chanos, and S. Forum, "Consumer interest in environmental impact, safety, health and animal welfare aspects of modern pig production: Results of a cross-national choice experiment," *Meat science,* vol. 137, pp. 123-129, 2018.

[8] M. B. A. Hammami *et al.,* "Survey on awareness and attitudes of secondary school students regarding plastic pollution: implications for environmental education and public health in Sharjah city, UAE," *Environmental Science and Pollution Research,* vol. 24, pp. 20626-20633, 2017.

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

[9] C. Harper and M. Snowden, *Environment and society: Human perspectives on environmental issues*. Routledge, 2017.

[11] I. Manisalidis, E. Stavropoulou, A. Stavropoulos, and E. Bezirtzoglou, "Environmental and health impacts of air pollution: a review," *Frontiers in public health,* vol. 8, p. 14.

[12] N. S. Mei, C. W. Wai, and R. Ahamad, "Environmental awareness and behaviour index for Malaysia," *Procedia-Social and Behavioral Sciences,* vol. 222, pp. 668-675, 2016.

[13] H. Oe, Y. Yamaoka, and H. Ochiai, "A qualitative assessment of community learning initiatives for environmental awareness and behaviour change: Applying UNESCO education for sustainable development (ESD) framework," *International Journal of Environmental Research and Public Health,* vol. 19, no. 6, p. 3528.

[14] A. Opoku, "Biodiversity and the built environment: Implications for the Sustainable Development Goals (SDGs)," *Resources, conservation and recycling,* vol. 141, pp. 1-7, 2019.

[15] W. H. Organization, *Tobacco and its environmental impact: an overview*. World Health Organization, 2017.

[16] E. Peberdy, A. Jones, and D. Green, "A study into public awareness of the environmental impact of menstrual products and product choice," *Sustainability,* vol. 11, no. 2, p. 473, 2019.

[17] P. F. Rupani, M. Nilashi, R. e. Abumalloh, S. Asadi, S. Samad, and S. Wang, "Coronavirus pandemic (COVID-19) and its natural environmental impacts," *International Journal of Environmental Science and Technology,* vol. 17, pp. 4655-4666.

[18] R. Saikia, "Role of mass media in creating environmental awareness," *Natl J Multidiscip Res Dev,* vol. 1, no. 2, pp. 1-4, 2017.

[19] E. A. Severo, J. C. F. De Guimarães, and M. L. Dellarmelin, "Impact of the COVID-19 pandemic on environmental awareness, sustainable consumption and social responsibility: Evidence from generations in Brazil and Portugal," *Journal of cleaner production,* vol. 286, p. 124947.

[20] M. Smith *et al.,* "Systematic literature review of built environment effects on physical activity and active transport–an update and new findings on health equity," *International journal of behavioral nutrition and physical activity,* vol. 14, no. 1, pp. 1-27, 2017.

[21] P. Straßer, C. Nikendei, T. J. Bugaj, M. Kühl, and S. J. Kühl, "Environmental issues hidden in medical education: What are the effects on students' environmental awareness and knowledge?," *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen,* vol. 174, pp. 97-102.

[22] N. Yazici and A. A. Babalik, "Determination of environmental awareness of university students: the case of Suleyman Demirel University (SDU)," *Environmental earth sciences,* vol. 75, pp. 1-8, 2016.

[23] F. O. Baah, A. M. Teitelman, and B. Riegel, "Marginalization: Conceptualizing patient vulnerabilities in the framework of social determinants of health—An integrative review," *Nursing inquiry,* vol. 26, no. 1, p. e12268, 2019.

ISSN: 0975-3583, 0976-2833 VOL 10, ISSUE 04, 2019

[24] A. Clonan, K. E. Roberts, and M. Holdsworth, "Socioeconomic and demographic drivers of red and processed meat consumption: implications for health and environmental sustainability," *Proceedings of the Nutrition Society,* vol. 75, no. 3, pp. 367-373, 2016.

[25] D. de Ridder, F. Kroese, C. Evers, M. Adriaanse, and M. Gillebaart, "Healthy diet: Health impact, prevalence, correlates, and interventions," *Psychology & health,* vol. 32, no. 8, pp. 907-941, 2017.

[26] S. Finn and L. O'Fallon, "The emergence of environmental health literacy—from its roots to its future potential," *Environmental health perspectives,* vol. 125, no. 4, pp. 495-501, 2017.

[27] C. Hartmann, M. B. Ruby, P. Schmidt, and M. Siegrist, "Brave, health-conscious, and environmentally friendly: Positive impressions of insect food product consumers," *Food Quality and Preference,* vol. 68, pp. 64-71, 2018.

[28] H. Karadeniz, "Effects of a safety-awareness–promoting program targeting mothers of children aged 0–6 years to prevent pediatric injuries in the home environment: implications for nurses," *Journal of Trauma Nursing| JTN,* vol. 25, no. 5, pp. 327-335, 2018.

[29] G. Lazaroiu, M. Andronie, C. Uţă, and I. Hurloiu, "Trust management in organic agriculture: sustainable consumption behavior, environmentally conscious purchase intention, and healthy food choices," *Frontiers in Public Health,* vol. 7, p. 340, 2019.

[30] R. Raudah, A. Hidir, and M. Nor, "Understanding educational management in the context of environmental protection for madrasah application," *Nazhruna: Jurnal Pendidikan Islam,* vol. 4, no. 2, pp. 419-433.

[31] K. Venkateswarlu, R. Nirola, S. Kuppusamy, P. Thavamani, R. Naidu, and M. Megharaj, "Abandoned metalliferous mines: ecological impacts and potential approaches for reclamation," *Reviews in Environmental Science and Bio/Technology,* vol. 15, pp. 327-354, 2016.

[32] O. Weber and B. Feltmate, *Sustainable banking: Managing the social and environmental impact of financial institutions*. University of Toronto Press, 2016.