The Path toward Achieving Good Health and Well-Being (SDG 3) through Quality Education (SDG 4)

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Abstracts: The Sustainable Development Goals (SDGs) call for all countries to achieve 17 broad development goals by 2030. One of the ways to achieve good health and well-being is health awareness to prevent diseases through high-quality education. This study aims to measure environmental awareness among Applied Science Private University (ASU) students in Jordan to attain good health and well-being. A cross-sectional questionnaire was conducted in 2022 containing 11 statements to measure students' health knowledge that contributes to disease prevention and its relationship to environmental pollution. The 11 statements within the study were subjected to mean and standard deviation summary analysis. The Mann-Whitney test was applied to determine students' environmental awareness to reach well-being concerning gender, age, and college. The sample involved 151 students from (ASU), 32.5 % of them are male students while the remaining (67.5 %) are females; 57 % are from scientific colleges while the remaining (43 %) are from humanities colleges, and 53 % are with ages greater than or equal to 20 years old, while the remaining (47 %) are with ages less than 20 years old. According to the results, students had a medium environmental awareness to reach well-being with a mean value of 2.1427 and a value of 0.30014 as standard deviation. Male students had higher environmental awareness reach well-being than females. Humanities colleges students had greater environmental awareness to reach well-being than scientific colleges students.

Keywords: Sustainable Development Goals, Quality education, Good health, Well-being, Environmental awareness, Applied Science Private University-students.

1. INTRODUCTION

The Sustainable Development Goals (SDGs) aim to change our world. It is a call to action to end poverty and inequality, protect the planet, and ensure everyone enjoys health, justice, and prosperity. SDG 3 is dedicated to the health and well-being of all ages and has 13 targets (Nilsson et al., 2016). Achieving Goal 3 of the Sustainable Development Goals will only be possible if the collective action of other sectors and places are taken into consideration. As an example, the efforts to achieve quality education (Goal 4) aimed at practicing habits that contribute to maintain their health by abstaining from smoking, eating healthy, exercising sports, and finally the ability to deal with stress (Weybrecht, 2017, Pradhan et al., 2017).

The role of education appeared effective during the Corona crisis and eliminating its effects or mitigating these effects (Plakhotnik et al., 2021). The University of Applied Sciences has produced many educational videos directed to the students and the community through its official website about the emerging of coronavirus, methods of infection, and the ways to prevent or minimize its spread (Sasa et al., 2022). It also provided part of its buildings to the Ministry of Health to be used as an approved health vaccine center against corona virus for local community. Many students from nursing college volunteered to do this vaccination. In addition, the university (ASU) was interested in making the Corona crisis a living part of the school curricula. It was taught to students in various study fields, such as history, biology, and economics (Roberts, 2021). For scientific research, the university (ASU) encouraged the academic staff to do research that studies the health and psychological effects of the Corona crisis, such as the factors that caused sleep disorders and its adverse effects on physical and mental health (Samah R. Meqdadi, 2022).

The ASU supports community service, and organizes awareness campaigns and seminars to support mental health for students and the local community (Tala Sasa, 2022). Part of these seminars deals with ways to deal with stress and sleep disorders, the importance of exercise and good nutrition (Dalky et al., 2016), the harms of

smoking, and the use of electronic devices (Wafa` A. Ahmad and Marwan, 2022), which impact physical and mental health (Elnaem et al., 2022). In addition to encourage volunteer work by the participation of students and faculty members, in providing awareness messages to the community to protect themselves against diseases, pollution, and promote the concept of community solidarity (Tan et al., 2020).

Pollution is one of the most factors that causes diseases, despite the progress of civilization and medicine (Al-Taai, 2022). Good education methods can contribute to reduce these diseases. As an example, raising awareness of the importance of prevention from pathogens and emphasizing the existence of a relationship between human diseases and environmental pollution (Pascapurnama et al., 2018).

There is a relationship between human diseases and the environmental pollution of all types (chemical, biological and radiation). This study will investigate the role of educating students about environmental pollution and its relationship between it and human diseases by preserving the environment and following good health habits to reach good health and well-being.

2. MATERIEL AND METHODS

2.1. Participants and Questionnaire:

This cross-sectional study was conducted in 2022. 151 Registered undergraduate students from ASU voluntarily participated in this study by accessing a link to an online survey. The questionnaire included questions that covered different aspects; the first part included the participants' sociodemographic factors (age, gender, and college). The second part included 11 statements that covered environmental awareness to reach well-being.

2.2. Statistical Analysis

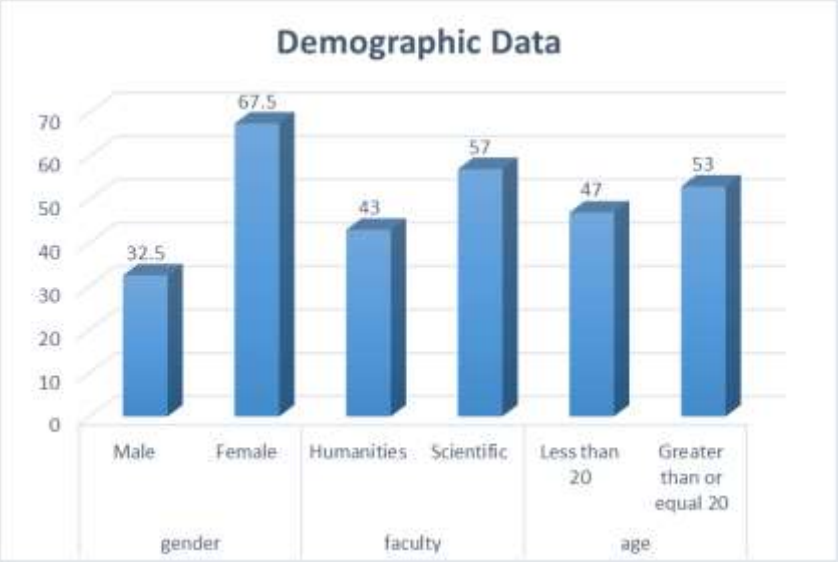
Three Likert-type grading were applied to environmental awareness to reach well-being. The scale was graded as “high agreement around value of 3”, “medium around value of 2”, and “low agreement around value of 1”. Statistical analysis was carried out using the Statistical Package for Social Sciences (version 22.0, SPSS, Inc.) software. Results were expressed as means ± SD (standard deviation). Variables were analyzed using s Mann-Whitney test. The Mann-Whitney test was applied to compare the variables of gender, age, and college with the variable of students' environmental awareness to reach well-being and measure a statistically significant difference. The statistical significance level was set at $p < 0.05$ (two-sided).

3. RESULT

3.1. Student’s Demographic Data

Figure 1 shows the demographic data of participants: 151 students, 32.5 % of them are male students while the remaining (67.5 %) are female ones; 57 % of students are from scientific colleges which include, the College of Engineering, Information Technology, Pharmacy, and Nursing, while the remaining (43 %) are from humanities colleges that include, the College of Arts, Literature, Science, Business, Law and Sharia; and 53 % of the students are with ages greater than or equal to 20 years old, while the remaining (47 %) are with ages less than 20 years old.

Figure 1: Student’s Demographic Data



3.2. Environmental Awareness to Reach Well-Being

The 11 statements within the study were initially subjected to mean and standard deviation summary analysis. Table 1 clearly shows that; the students support that pollution causes the incidence of diseases among citizens. This means that there is a relationship between human diseases and environmental pollution. Furthermore, Health awareness is one of the best ways to protect people from environmental pollution. This support by students is considered with high agreement for all items related to pollution (the first 5 statements in Table 1). Students also show high agreement that chemical pollution of the environment contributes to human cancer and a high mortality rate. On the other hand, students also show low agreement for the cause of cancer due to smoking and this relationship is exaggerated. Through the results, the students confirmed that the factors which because fetal deformities are not only genetic but also due to environmental pollution. The students show medium agreement about that, “reporting infectious diseases and taking preventive measures are the responsibility of Ministry of Health employees but not the public. Students also show medium agreement about that, solid waste management contributes reduction of the spread of illness. The final rank with low agreement about the last two statements 10 and 11 (Table 1), “Excessive water consumption is a manifestation of hygiene” and “The spread of dangerous diseases in some countries does not affect others”.

Table 1: The mean and standard deviation for study items

Statements measure environmental awareness to reach well-being	Mean	Standard Deviation
1. Pollution leads to an increase in the incidence of diseases among citizens	2.9139	0.36406
2. There is a relationship between human diseases and environmental pollution	2.8742	0.43672
3. Health awareness is one of the best ways to protect people from environmental pollution	2.8675	0.37728
4. The chemical pollution of the environment contributes to human cancer	2.7815	0.50192
5. The increasing concentration of pollutants in the environment leads to an increase in the mortality rate	2.7285	0.55298
6. Collecting, transporting, and dumping solid waste outside residential areas reduces the spread of diseases	1.8675	0.87693
7. Reporting infectious diseases and taking preventive measures are the sole responsibility of the Ministry of Health employees and not community members	1.7219	0.91038
8. Fetal abnormalities are caused by genetic and environmental pollution	1.7086	0.81314
9. Everything about smoking and its relationship to cancer is exaggerated.	1.3974	0.74009
10. Excessive water consumption is a manifestation of hygiene	1.3642	0.71632
11. The spread of dangerous diseases in some countries does not affect us.	1.3444	0.72154
Students' environmental awareness to reach well-being	2.1427	0.30014

3.3. The Mann-Whitney test

Table 2 shows statistically significant differences between the mean ranks in the students' environmental awareness to reach well-being between males and females, since p = 0.005 is less than 0.05. Male students have higher environmental awareness reach well-being than females. In addition, no statistically significant differences between the mean ranks in the students' environmental awareness to reach well-being variable between students with age less than 20 years old and those with age more than 20 years old, since p = 0.18 is greater than 0.05. Finally, there are statistically significant differences between the mean ranks in the environmental awareness to reach well-being variable between students who belong to humanities colleges and those who belong to scientific colleges, since p = 0.002 is less than 0.05. Humanities colleges students had greater environmental awareness to reach well-being than scientific colleges students.

Table 2: Comparing the variables of gender, age, and college with the variable of students' environmental awareness to reach well-being

variables		Mean rank	Sum of Ranks	p-value
Age	Less than 20 years old	81.01	5752.00	0.180
	Greater than or equal to 20 years old	71.55	5724.00	
Gender	Male	90.14	4417.00	0.005
	Female	69.21	7059.00	
Colleges	Humanities Sciences	88.42	5747.00	0.002
	Scientific Sciences	66.62	5729.00	

4. DISCUSSION

Health education has a crucial role in achieving good health and well-being. Beginning by preserving the environment from pollution, whenever the individual acquires concepts and values that help reduce environmental pollution, and these values lead to a change in behavior (Tala Sasa, 2022), we will have contributed to eradicating diseases or alleviating the symptoms (Wimalawansa, 2019). Successful introduction of environmental health education depends on the quality of instructional activities that incorporate the tools that result in appropriate lasting learning. A certain depth of conceptual understanding is a prerequisite for effective problem-solving and decision-making (Lestari et al., 2018). Student involvement in environmental health issues and the identification and valuation of information is essential to prevent the impact of pollution, protect against disease and reduce mortality. Previous research shows that more than 4 million people die prematurely yearly due to air pollution (Valavanidis, 2023). The number of premature deaths linked to air pollution will climb over the next two decades unless more aggressive targets are set. More than half of deaths occur in two of the world's fastest-growing economies, China, and India. About 1.6 million people died of air pollution in China, and 1.4 million died in India in 2013. Air pollution is a risk factor for death globally and disease. Reducing air pollution is an incredibly efficient way to improve the health of a population (Zhao and Kim, 2022).

In this study, results showed that ASU students with low agreement about the issue that smoking causes cancer diseases, and this is exaggerated. Our previous study showed that ASU students believe that cigarette is harmful to their health and are aware of the risk of smoking to their health (Wafa` A. Ahmad and Marwan, 2022). A recent study by Chan et al., confirmed that smoking was associated with higher risks of morbidity and mortality from a wide range of diseases (Chan et al., 2022).The results showed that the ASU students had low knowledge about the fact that collecting, transporting, and dumping solid waste outside residential areas reduces the spread of diseases. Many studies confirm that proper way of solid waste management reduces the spread of diseases. This goal was achieved by sharing a lot of information with students about how to deal with waste, starting with sorting it at home, then using proper methods for disposing or recycling (Kapoor, 2023); Ineffective solid waste management of household on public health lead to physical and biological risks and non-communicable, psychological, and social diseases. Polluted soil, air, and water provide breeding for flies, rodents, and insect pests. Many diseases are

caused sequentially by these biological vectors, such as diarrhea, dysentery, gastrointestinal problems, worm infection, food poisoning, irritate skin, nose, and eyes, and respiratory symptoms. Exposure to gases from landfill waste can cause inflammation and bronchiectasis and affect immune cells. Many studies also estimated that the pollution from the dumpsite might cause cancers in the liver, pancreas, kidney, larynx, and lymphoma. Other health effects are birth defects, congenital disorders, and Down's syndrome. Inefficient household waste management can lead to psychosocial effects such as disturbing odor, unsightly waste, and stress-related problems (Vinti et al., 2021).

Our result showed that the ASU students did not believe that, excessive water consumption is a manifestation of hygiene. These results may emerge from the students' awareness of water security. Adequate access to water, sanitation, and hygiene (WASH) is crucial for protecting human health during outbreaks of infectious diseases. Therefore, the World Health Organization (WHO) strongly advocates hand hygiene as a critical control measure to minimize the transmission of infection caused by bacteria and viruses. The COVID-19 pandemic increased hygiene behavior, and the frequency of hand washing improved. The high mortality rates due to COVID-19 were likely associated with weak and inadequate WASH infrastructure. Many findings showed that the majority of the population received information on hygiene measures to avoid COVID-19, such as handwashing and disinfecting drinking water and hands regularly (Rahaman et al., 2023). Malnutrition is directly associated with insufficient dietary intake, but lack of access to safe and adequate WASH results in recurrent infectious diseases such as intestinal parasites, diarrhea, and COVID-19. The intestinal parasites inhibit the absorption of nutrients leading to compromised immunity of the host (Shrestha et al., 2022).

Mandatory reporting of infectious diseases (MRID) is a practice to prevent disease outbreaks and protect public health by obtaining timely and accurate information about the infection, including its patterns of spread and transmission. The ASU student results showed a medium agreement for the need to report infectious diseases and considered this job is the responsibility of the Ministry of Health employees only. The WHO considers this job also as a mandatory measure implemented in health systems to control disease outbreaks. Ministry of Health has notification systems that are determined according to the characteristics of the disease, including the course of transmission, severity, risk of spread, and vulnerable populations (Sert et al., 2022). A quality education intervention is required to achieve awareness, knowledge, and ability to differentiate between mandatory reporting of infectious diseases (MRID) and disease surveillance. MRID is crucial to the Ministry of Health, and it is also the responsibility of the public. So that MOH personnel can then systematically collect, classify, analyze, and interpret healthcare data essential for planning, implementing, and evaluating public healthcare practice. Accurate reporting, recording medical, and initiating the notification process on time are critical in preventing the spread of diseases (Unim et al., 2022). The data obtained through reports of reportable infectious diseases are used for many purposes, including preventing the spread and negative impact, assessing the national and global situation, conducting scientific research, coordinating interventions, and developing or modifying health policies. It is possible to build public confidence in the reporting system by increasing transparency and instilling confidence that personal data is handled with great care in terms of confidentiality and it is used only for specified purposes (Janati et al., 2015).

5. CONCLUSION

The human impact on the environment has increased global concerns about the effect on human health. Top international priorities; include slowing the rate of climate change; and global warming, protecting water and air quality, reducing the health impacts of disasters, and reducing human exposure to toxic chemicals. Under these circumstances, education must produce citizens capable of participating in environmental health concerns. Our results showed the ASU students support that pollution causes the incidence of diseases among citizens, there is a relationship between human diseases and environmental pollution, and health awareness is one of the best ways to protect people from environmental pollution. The study also showed that male students have higher environmental awareness than females. Humanities colleges students had greater environmental awareness to reach well-being than the scientific colleges students.

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