Environmental Awareness and Green Consumption Behaviour in Saudi Arabia: Perceptions and Associations

Hatim Matooq Badri, PhD* Ahmed Salah Alkathiri, PhD** Baraa S. Quronfulah, PhD** Wahaj A. Khan, PhD* Atoof Hamid Khayat, BSc*** Rawan Ibrahim Alsubhi, BSc*** Nida'a Abdulmonem Alzarmah, BSc*** Rawan Ali Allahyani, BSc*** Mohamed O. Elamin, PhD* Mohammad Nabeel Shah, PhD**** Rakan Ekram, PhD*****

ABSTRACT

This study explores the association between environmental awareness and green consumption behaviour in Saudi Arabia. Utilising a cross-sectional study design, data was collected via an online questionnaire from 682 participants across various regions of the Kingdom. The survey assessed demographic characteristics, levels of environmental awareness, and green consumption behaviours. A strong positive correlation ($r = 0.81$, $p < 0.001$) was found between environmental awareness and green consumption behaviour. Also, gender and age were significant determinants for the aforementioned variables, with males and individuals aged 35-54 and 55 and over showing higher levels of environmental awareness and green consumption behaviour compared to other groups. This study shows the important role of demographic factors in increasing sustainable consumption practices. Recommendations include targeted awareness campaigns and policy initiatives to promote eco-friendly behaviours, particularly among younger populations. Future research should investigate additional factors influencing these behaviours and evaluate the causal relationships in different population groups.

Keywords: Eco-friendly products, environment, awareness, green consumption, green purchasing behaviour.

INTRODUCTION

Scientific evidence has long confirmed the negative effect pollution has on the environment and human health. Recent increases in pollution have also brought to attention the importance of rational, eco-friendly consumption. Hence, several behavioural concepts have evolved, including: (i) Green Consumption Behaviour (GCB): purchasing products that diminish negative impacts or enhance positive effects on human health and the environment[1]; and (ii) Environmental Awareness (EA): the consumer's recognition of environmental impacts and the intent to choose eco-friendly products to mitigate those impacts[2].

Green consumption behaviour is thought to be heavily influenced by individual willingness or intention to use environmentally friendly products, as shown in previous studies[1-4]. Also, it is influenced by brands that support green behaviour and know which product has the most significant positive or least negative impact on the environment and promote such product to the consumer[5,6]. This indicates that the more knowledge and information a consumer has about green behaviour, the more likely they will engage in such behaviour[7]. A study by Wang et al., 2019, showed that the intention to buy organic food, for example, can become a societal norm if there is sufficient or increased knowledge about organic foods. It is also possible for people with little knowledge about organic foods to have a different, perhaps negative, perspective[8]. Thus, according to the rational model, which is based on the assumption that increasing individual knowledge will lead to behaviour change[9], it can be implicitly assumed that consumers' knowledge about green behaviour will eventually lead them to buy green products.

A plethora of studies have previously investigated the relationship between environmental awareness and green consumption behaviour and the factors that affect both. Ibok & Etuk (2014), confirmed the existence of a strong relationship between the personal and social characteristics of the individual and green consumption behaviour. The study highlighted the positive impact of improving the educational level on promoting attitudes towards environmental friendliness[10]. Panzone et al., (2016) found that personal and social traits and characteristics such as age, gender, and social class influence people's

* Associate Professor, Department of Environmental and Occupational Health
College of Public Health and Health Informatics
Umm Al-Qura University, Makkah, Saudi Arabia
Email: hmbadri@uqu.edu.sa

** Assistant Professor, Department of Health Promotion and Education
College of Public Health and Health Informatics, Umm Al-Qura University
Makkah, Saudi Arabia.

*** Student, Department of Health Promotion and Education
College of Public Health and Health Informatics, Umm Al-Qura University
Makkah, Saudi Arabia.

**** Assistant Professor, Department of Epidemiology and Medical Statistics
College of Public Health and Health Informatics, Umm Al-Qura University
Makkah, Saudi Arabia.

***** Assistant Professor, Department of Health Administration and Hospitals
College of Public Health and Health Informatics, Umm Al-Qura University
Makkah, Saudi Arabia.

opinions, attitudes, values, and consumption behaviour[11]. Morrison & Beer, (2017) revealed in their study that the most environmentally conscious group was middle-aged buyers are[12]. The study indicated that the level of awareness increases with age, peaks in the middle age and then drops down as age increases.

According to the authors' knowledge, no study has been conducted to measure environmental awareness and its relationship with green consumption behaviour in Saudi Arabia. Given the importance of such a topic, this study investigated the relationship between the aforementioned variables among the general population of the Kingdom of Saudi Arabia. The authors aimed to measure whether environmental awareness is a sufficient reason for a consumer to practice green consumption behaviour by (i) exploring the possible association between environmental awareness and green consumption behaviour; (ii) exploring the impact of differences in demographic characteristics on environmental awareness and green consumption behaviour; and (iii) measuring the impact of environmental awareness on consumer behaviour.

METHODOLOGY

A descriptive study with a cross-sectional design was used. The study was conducted in the Kingdom of Saudi Arabia in all its regions (western, eastern, northern, and southern) in the period from October 2022 to June 2023. Permission was obtained from the National Committee for Bioethics (NCBE) at King Abdulaziz City for Science and Technology (KACST) before the commencement of the project, Approval No. (HAPO-02-K-012-2023-01-1407). Electronic consent was also obtained from each participant. All ethical principles were strictly adhered to throughout the study. Sample size calculated using Cochran's Formula for Proportion-infinite population n=(Z^2pq)/e^2, power = 0.80, The necessary Sample size n = (1.96)^2×(0.5×0.5)/(0.05)^2=384.16. The sample size was rounded up to 385 people—a convenience sampling technique we used for data collection. The study population was all adults aged 18 years and above in the Kingdom of Saudi Arabia. The study adopted an online survey using Google Forms. The survey consisted of fifteen questions divided into three sections; (i) demographic characteristics, which collected information on gender, region of residence, age, and education level; (ii) environmental awareness, which contained seven items, two of which were adapted from Suganda et al., (2022)[4] and the other five were adapted from Mostafa (2007)[13]; (iii) green consumption behaviour, which contained four items that were adapted from Zheng et al., (2020)[14]. The questions were translated into Arabic by an independently certified language translator and reviewed for clarity by the authors; some unknown terms were defined for better understanding and accurate results, such as environmental awareness and green consumption behaviour. The questionnaire was tested to ensure clarity and consistency before data collection. Pearson correlation coefficient (PCC), T-test, and ANOVA for various purposes. Data were collected, coded, entered, and analysed using the Statistical Package for the Social Sciences (SPSS) software with version 26 for Windows. We considered all statistical tests significant at $p < 0.05$.

RESULTS

A total of 682 respondents participated in this study. With regards to the demographics (Table 1), the results indicated that the majority of the study sample were females (494 - 72.4%) compared to males (188 - 27.6%). The highest percentage of participants were aged 18-34 (329 - 48.2%), followed by those who were 35-54 (253 - 37%), and those who were 55 and over (100 - 14.7%). As for the area of residence, the highest percentage of participants were from the western region (254 - 37.2%), followed by those from the central (115 - 16.9%), southern (109 - 16%), eastern (103 - 15.1%), and northern regions (101 - 14.8%). In terms of education, the majority had a bachelor's degree (304 - 44.6%), followed by those who finished high school (264 - 38.7%), secondary school (66 - 9.7%), postgraduate studies (40 - 5.9%), and primary school or less (8 - 1.2%).

Table 1. Demographics.

Variable		(n)	%
Gender	Female	494	72.4
	Male	188	27.6
Age	18-34	329	48.2
	35-54	253	37.1
	55 and over	100	14.7
Region	Western Region	254	37.2
	Eastern Region	103	15.1
	Southern Region	109	16.0
	Northern Region	101	14.8
	Central Region	115	16.9
Education Level	Primary school or less	8	1.2
	Middle school	66	9.7
	High school	264	38.7
	Bachelor	304	44.6
	Postgraduate	40	5.9
Total	682		

A Pearson correlation coefficient (Table 2) indicated that there is a strong positive correlation between participants' ratings of environmental awareness and green consumption behaviour, [r(680) = .81, $p < .001$].

Table 2. Pearson correlation coefficient for environmental awareness and green consumption behavior.

		Environmental Awareness
Green Consumption behaviour	**Pearson Correlation**	.807**
	p	<0.001
	N	682

An independent t-test of environmental awareness and green consumption behaviour between genders in (Table 3) showed that males had higher environmental awareness and green consumption behaviour than females, $p < 0.05$. A significant difference was found in the scores of green consumption behaviour for females ($M = 3.7$, $SD = 0.96$) and males ($M = 4.0$, $SD = 0.95$) conditions; t (680) = -4.03, $p = 0.000$. Also, a significant difference was found in the scores of environmental awareness of ($M = 6.6$, $SD = 1.37$) and males ($M = 7.1$, $SD = 1.41$) conditions; t (680) = -4.71, $p = 0.000$.

A ONE-WAY ANOVA for green consumption behaviour and environmental awareness revealed a significant relationship between environmental awareness (F (2,679) = 64.074, p = .000) and green consumption behaviour (F (2,6790) = 67.430, p = .000) and age. According to the post hoc test, there is no significant difference between the 35-54 age group and the 55 and over group, and these groups had significantly had higher environmental awareness and green consumption behaviour compared to the 18-34 group (Table 4).

DISCUSSION

This study examined the relationship between environmental

Table 3. Results of the Independent samples t-test of environmental awareness and green consumption behaviour between genders

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**
Green consumption behaviour	Equal variances assumed	4،012	،046	-4،030	680	،000	-،33056	،08203
	Equal variances not assumed			-4،050	341،309	،000	-،33056	،08161
Environmental awareness	Equal variances assumed	1،036	،309	-4،705	680	،000	-،55638	،11827
	Equal variances not assumed			-4،650	330،260	،000	-،55638	،11964

Table 4. Results of the one-way ANOVA test of environmental awareness and green consumption behaviour between ages.

		df	**F**	**Sig.**
Green consumption behaviour	Between Groups	2	67.430	.000
	Within Groups	679		
	Total	681		
Environmental awareness	Between Groups	2	65.856	.000
	Within Groups	679		
	Total	681		

awareness and green consumption behaviour in Saudi Arabia. The two aforementioned variables are extremely important in increasing awareness of sustainability and minimising the effects of current environmental challenges. Previous reports indicate that environmental awareness influences green purchase intentions. Kour (2024) reported that the willingness to buy green products is affected by an individual's perceived environmental ethics and moral obligations, which suggests that increased environmental awareness can eventually lead to increased green consumption[15]. Also, Wang et al., (2022) indicated that attitudes toward green consumption are positively affected by environmental awareness, which can lead to positively influencing an individual's intention and green consumption behaviours[16]. As for green consumption behaviour, previous reports indicate that it is affected by social media and policy incentives. Ali et al. (2022) found that social media is critical in increasing awareness of green products, which could change people's green purchasing intentions and behaviours, and contribute to environmental sustainability[17]. Also, Shen and Wang (2022) reported that policy incentives impacts the relationship between pro-environmental awareness and green consumption behaviour, highlighting the effects of supportive policies in promoting green consumption behaviour[18].

In this study, environmental awareness and green consumption behaviours were found to be positively correlated. In addition, they were found to be positively related to demographic characteristics. When the relationship between environmental awareness and green consumption behaviour, and gender was measured, males were found to have higher environmental awareness and green consumption behaviour than females. The literature on environmental awareness and green consumption behaviour suggests notable gender differences, which can vary based on cultural, socioeconomic, and contextual factors. Studies consistently report that women tend to exhibit greater environmental concern and green consumption behaviour than men. Women are more likely to express worry about environmental issues, such as climate change, pollution, and resource depletion[19-23]. They are also more inclined toward sustainable consumption behaviours and purchasing eco-friendly products[24,25]. The significant difference in environmental awareness and green consumption behaviour in this study could be attributed to the culture in Saudi society; purchasing decisions are more likely to be made by males because they are usually the main source of income for most families.

The results also found a relationship between environmental awareness and green consumption behaviour and age; people between the ages of (35-54) and (55 and over) were found to have more environmental awareness and green consumption behaviour than those aged (18-34). Previous reports do suggest the presence of a relationship between environmental awareness and green consumption behaviour, and age. Aminrad et al. (2011) showed that older individuals had higher levels of environmental awareness[26]. Also, a comprehensive meta-analysis by Wiernik, Ones, and Dilchert (2013) explored how age affects various environmental sustainability-related psychological variables. The research revealed that most connections were minimal. However, it also highlighted some small yet broadly applicable patterns, suggesting that older individuals tend to interact more with nature, take steps to prevent environmental damage, and make efforts to preserve natural resources and raw materials[27]. Moreover, Montano Barbuda et al. (2022) assessed environmental awareness among health science students and found that students under 20 years of age had higher percentages of unacceptable levels compared to older students, suggesting that environmental awareness may increase with age during early adulthood[28]. In addition, previous reports indicated that older age groups tend to be more sensitive in their consumption patterns, exhibiting higher levels of environmental concern compared to younger individuals[29].

Given the importance of environmental awareness and green consumption behaviour on sustainable development and their role in addressing environmental challenges such as climate change, pollution, and resource depletion, more needs to be done to address low levels of environmental awareness and increase people’s consumption of green products. Awareness campaigns could assist by showing the interconnections between human activities and environmental health

while encouraging individuals, communities, and organisations to adopt practices that minimise harm to the environment. Also, policies and regulations could be created to support the production and consumption of goods with a lower environmental footprint, fostering long-term sustainability and driving the transition to a circular economy by emphasising reuse, recycling, and waste reduction.

Even though our findings highlight the relationship between environmental awareness and green consumption behaviour, like any other research, it has some limitations including; (i) the different factors affecting environmental awareness and green consumption behaviour were not explored; (ii) causal inferences were not made due to the study's cross-sectional design; (iii) the small sample size and the convenience sampling method meant that the results could not be generalised; and (iv) the inaccuracy of the statistical relationship presented here due to the dependence on self-reporting of data.

CONCLUSION

This study measured the extent to which environmental awareness affects green consumption behaviour and investigated the existence of a relationship between the two variables, along with identifying the demographic factors affecting such a relationship. It was found that age and gender affect environmental awareness and behaviour towards green products. Among the aforementioned factors, age is of great importance to the Kingdom of Saudi Arabia, as young adults form the majority of the Kingdom's population. Therefore, understanding their level of awareness is important for public health programs related to the protection of the environment and to planning future strategies and designing effective promotional campaigns aimed at impacting green consumption behaviour. Further research is required to assess the correlation between environmental awareness and green consumption behaviour in different groups of the community and examine the different factors that impact environmental awareness and green consumption behaviour among youths specifically. Also, more research that focuses on how environmental awareness might impact green consumption behaviour and how both factors can positively affect human health, along with the appropriate interventions to address such shortcomings in this issue, is required.

Authorship Contribution: All authors contributed equally to collecting data, analysing data, and writing of manuscript.

Potential Conflicts of Interest: None

Competing Interest: None

Acceptance Date: 24 August 2025

REFERENCE

1. Jaini A, Quoquab F, Mohammad J, et al. Antecedents of green purchase behavior of cosmetics products: an empirical investigation among Malaysian consumers. *Int. J. Ethics Syst*. 2020;36(2):185-203.
2. Steg L, Vlek C. Encouraging pro-environmental behaviour: an integrative review and research agenda. *J. Environ. Psychol*. 2009;29(3):309-17.
3. Kumar B, Manrai AK, Manrai LA. Purchasing behaviour for environmentally sustainable products: a conceptual framework and empirical study. *J. Retail. Consumer Serv*. 2017;34:1-9.
4. Suganda UK, Theresia MP, Wijaya HA. Antecedent of green purchase behavior: cases of Indonesia. *Int. J. Bus. Ecosyst. Strat*. 2022;4(1):1-10.
5. Mohd Suki N. Green product purchase intention: impact of green brands, attitude, and knowledge. *Br. Food J*. 2016;118(12):2893-910.
6. Sharma AP. Consumers' purchase behaviour and green marketing: a synthesis, review and agenda. *Int. J. Consum. Stud*. 2021;45(6):1217-38.
7. Wang H, Ma B, Bai R. How does green product knowledge effectively promote green purchase intention? *Sustainability*. 2019;11(4):1193.
8. Wang X, Pacho F, Liu J, et al. Factors influencing organic food purchase intention in developing countries and the moderating role of knowledge. *Sustainability*. 2019;11(1):209.
9. Uzonwanne F. Rational model of decision making. In: Farazmand A, editor. *Global Encyclopedia of Public Administration, Public Policy, and Governance*. Cham: Springer; 2016: 1-6.
10. Ibok NI, Etuk JS. Socio-economic and demographic determinants of green consumption among households in Nigeria. *Int. J. Managerial Stud. Res*. 2014;2(9):47-56.
11. Panzone LA, Hilton D, Cohen D, et al. Socio-demographics, implicit attitudes, explicit attitudes, and sustainable consumption in supermarket shopping. *J. Econ. Psychol*. 2016;55:77-95.
12. Morrison M, Beer J. Consumption and environmental awareness: demographics of the European experience. In: Higano Y, editor. *Socioeconomic Environmental Policies and Evaluations in Regional Science*. Singapore: Springer; 2017: 81-102.
13. Mostafa MM. Gender differences in Egyptian consumers' green purchase behaviour: the effects of environmental knowledge, concern and attitude. *Int. J. Consum. Stud*. 2007;31(3):220-9.
14. Zheng G-W, Siddik AB, Masukujjaman M, et al. Perceived environmental responsibilities and green buying behavior: the mediating effect of attitude. *Sustainability*. 2020;13(1):35.
15. Kour M. Understanding the drivers of green consumption: a study on consumer behavior, environmental ethics, and sustainable choices for achieving SDG 12. *SN. Bus. Econ*. 2024;4(9):97.
16. Xie C, Wang R, Gong X. The influence of environmental cognition on green consumption behavior. *Front. Psychol*. 2022;13:988585.
17. Ali M, Ahmad MS, Ahmad R, et al. Assessing the impact of green consumption behavior and green purchase intention among millennials in China. *Environ. Sci. Pollut. Res*. 2023;30(9):23335-47.
18. Shen M, Wang J. The impact of pro-environmental awareness components on green consumption behavior: the moderation effect of consumer perceived cost, policy incentives, and face culture. *Front. Psychol*. 2022;13:580823.
19. Xiao C, McCright AM. Explaining gender differences in concern about environmental problems in the United States. *Soc. Nat. Resour*. 2012;25(11):1067-84.
20. Zelezny LC, Chua P-P, Aldrich C. New ways of thinking about environmentalism: elaborating on gender differences in environmentalism. *J. Soc. Issues*. 2000;56(3):443-57.
21. Ureña F, Bernabéu R, Olmeda M. Women, men and organic food: differences in attitudes and willingness to pay. *Int. J. Consum. Stud*. 2008;32(1):18-26.
22. Radman M. Consumer consumption and perception of organic products in Croatia. *Br. Food J*. 2005;107(4):263-73.
23. Echavarren RA. The gender gap in environmental concern: an ecofeminist perspective. *Sex Roles*. 2023;89(9):610-23.
24. Laroche M, Bergeron J, Barbaro-Forleo G. Targeting consumers who are willing to pay more for environmentally friendly products. *J. Consum. Mark*. 2001;18(6):503-20.
25. Khan AJ, Trivedi P. Gender differences and sustainable consumption behavior: a study of consumers' green behavior at Allahabad city. *Br. J. Mark. Stud*. 2015;3(3):29-35.
26. Aminrad Z, Zakaria SZBS, Hadi AS. Influence of age and level of education on environmental awareness and attitude: a case study on Iranian students in Malaysian universities. *Soc. Sci*. 2011;6(1):15-9.

27. Wiernik BM, Ones DS, Dilchert S. Age and environmental sustainability: a meta-analysis. *J. Manag. Psychol*. 2013;28(7/8):826-56.
28. Garay JPP, Elizondo F, Velazquez R, et al. Environmental awareness in university students according to gender and age. *Webology*. 2022;19(1):1915-29.
29. Vistharakula R, Kaushik R. Influence of gender and age with consumers' green behavior. *Curr. J. Appl. Sci. Technol*. 2021;40(12):95-100.