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Full Length Research Paper

Consumers' awareness and consumption intention towards green foods

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Consumers' food consumption patterns are changing rapidly. Consumers are becoming more concerned about the food they consume. They tend to consume food that is nutritious, healthy, safe and friendly to the environment and animals. Thus, the green concept is now steadily being disseminated among consumers in conjunction with the sustainability and conservation of agricultural development. Green foods refer to foods that are safe for consumption, fine in quality and are nutritious in meeting the principle of sustainable development. This paper focuses on the consumers' awareness and intention towards green foods consumption in Malaysia. The theory of planned behavior (TPB) is applied in this study. A structured questionnaire was designed and used as an instrument to gather information on green food consumer behavior. A survey was conducted in late 2010 and 1355 respondents were used in the questionnaire. Descriptive statistics and chi-square analyses were used to analyze the data collected. The results indicate that most of the respondents are aware of the green concept. The results also show that there are significant differences among the respondents' awareness towards green food and age, geographical area, education level and income. The respondents also indicated that green food is not only about being organic but it also encompasses the concept of food safety, health issues, environmental hazard as well as animal welfare. Thus, most of the respondents were aware of the green concept which is a strong indicator of consumers' intention to go green in food consumption.

Key words: Consumers, awareness, intention, green concept, foods, sustainable agriculture.

INTRODUCTION

Food is the basic need for all human beings to support life; therefore, consumers have the right to choose good quality and safe foods for their own consumption. The three most considered factors by the consumers with regards to food are food safety, the protection of the environment and animal welfare (Fraser, 2001). From the public's point of view, these three factors are linked together (Blanford et al., 2002). In the case of domesticated animals, it is natural for the consumers to think that an improvement in animal rearing methods will result in better, healthier and safer food which have less of an impact on the environment and improves animal welfare (Passille et al., 2005). This phenomenon has attracted the food industry players and marketers to focus more on the safety, health, environmentally friendly and animal welfare aspects of food products.

The Malaysian government is strongly involved in promoting food safety, environmental protection and animal welfare among all the firms that are involved in the food industry. The government has launched the good agricultural practices (GAPs) program to crops, livestock and fishery producers in order to enhance the objectives of sustainable agriculture and to improve food quality and productivity. Along with the GAP the government has also introduced the Malaysian Farm Accreditation Scheme (SALM) which was developed for the fresh fruits and vegetables sectors which operate in a more environmentally friendly way and yield products that are safe, have a high quality and are suitable to consume. The Malaysian government has also introduced the Malaysia Organic

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Scheme (SOM) which provides guidelines on the production, processing, labeling and marketing of plant based organically produced foods which is in accordance to Malaysian Standards (Golnaz et al., 2011). These schemes will provide benefits to the consumers, producers, workers and to the environment. Since synthetic fertilizers and pesticides are prohibited from being used under the organic farm system, environmental pollution and the incidental poisoning of farm workers is minimized. Besides focusing on vegetable and fruit production, the Malaysian government is also concerned with the green concept among livestock and fishery producers and processors. Thus as early as the 1980s the government introduced the Good Animal Husbandry Practices (GAHP) and Veterinary Health Mark (VHM) for animal products and the Aquaculture Farm Accreditation Scheme for aquaculture produce. Therefore, most farmers in Malaysia are already aware of sustainable agriculture and good practices in the production of food products. The question is, do farmers in general care about the green concept when performing their production practices? Unless there is pressure from consumer groups the green concept will not be successful in Malaysia.

In current times, as Malaysia moves towards becoming a developed country where more of her population is educated, the more the country will be concerned with the environment, food safety and animal welfare. Malaysians are therefore becoming more willing to purchase higher quality, healthy and safe foods. The changing trend in food consumption has put a lot of pressure on food producers to follow the rules and regulations and to obtain accreditation certification from respective certification issuing agencies. Thus, it is timely for profit driven firms to adopt green production, processing and marketing in their businesses. This is to satisfy consumers' needs and wants and build long term profitable relationships with its consumers (Tan and Lau, 2010). Thus, green marketing is one of the major trends in modern agribusiness. Besides fulfilling consumers' wants, needs and desires, it also preserves the natural environment and provides benefits to society in a more sustainable way (Welford, 2000).

Although, some companies have already adopted green marketing, they have encountered a number of challenges which includes the variability of demand, unfavorable consumer perceptions of green products and high costs invested in developing green products (Gurau et al., 2005). As a result, it is important for the food industries to understand consumers' behavior, level of awareness, perception and intention towards green food consumption.

LITERATURE REVIEW

Green food consumers are now steadily increasing all over world. Green foods refer to foods that are safe to be consumed, of fine quality, nutritious, concerned with animal welfare and are healthy, and which are produced under the principle of sustainable development (Liu, 2003). Green foods consist of two groups. The first group of green foods allows for the use of a certain limit of chemicals but the second group refers to organic foods. Therefore, the first group lays a good foundation to develop the second group. Consumers consume green foods or green products when their needs and wants for quality, availability, convenience, performance, and affordability are met and when consumers realize that green foods and products can help to solve environment problems (Ottman, 1999).

Food consumption patterns in Malaysia have changed due to the rapid expansion of the economy over the past two decades with an economic growth rate of around 6% per year since 2000. Moreover, this has resulted in the rapid growth of the agricultural food industry and in the demand for agricultural products. Rapid growth in income per person among Malaysians and relatively high population growth has changed the consumer preferences of food choice toward a more healthy and nutritious lifestyle. Consumers now have stronger purchasing power and more choice when purchasing and consuming food. Therefore, more people demand healthier, safer, hygienic, environmentally friendly and higher quality foods (Abdul, 2009). In Malaysia, consumers have a low level of importance on food safety concerns but they have a higher level of health consciousness (Shaharudin et al., 2010). Abdul (2009) found that in Malaysia, consumers who are concerned about their health and the environment will most likely have a positive attitude towards green foods.

There are some green stores in Malaysia that promote green food and technology, environmentally friendly products and services, and which at the same time also makes consumers to be aware of the green concept. For example, the Justlife Group Sdn. Bhd. which is an organic retail franchise that promotes green products, recycling activities and tries to work with nature in sustainable development. Another example is the Ecogreen Organic Shop which began operating in 1997 and runs an organic product shop, organic café and organic restaurants. They promote organic foods that are benefit our health and long term sustainability. The Body Shop is another example of an agri-based beauty shop where by the products they sell is not tested on animals. They are against animal testing in the cosmetic industry and they use natural materials. The body shop also tried to reduce the impact it has on the environment by introducing plastic bottles which are made from 100% recycled materials, by replacing all carrier bags with 100% recycled organically grown cotton and increased the recycled content of gift packaging.

In Malaysia, food safety remains one of the major issues that are faced by the food industry (Euromonitor

International, 2004). Food poisoning incidents in Malaysia are increasing, although various attempts to tackle these incidents have been made by the Malaysian government through its National Food Safety policy (Ministry of Health, 2001). Recently, consumers have become more concerned with food safety, food poisoning and food contamination. There was one case which happened in early 1987 when Singapore rejected the import of vegetables from Malaysia due to its high dithiocarbarnate residue content (Ooi, 1992). Furthermore, in April 2008, the Malaysian government 'self banned' the export of its seafood industry to the European Union (EU) because the EU found out that some companies did not meet the health standards and practices set by the EU.

They found out that the ship that was used for the transportation lacked hygiene facilities such as hand washing basins, toilets and damaged and rusting equipment such as freezing trays (CHT, 2008) were being used on board. In 2004, Malaysia first discovered the outbreak of the bird flu variant H5N1. About 200 chickens, ducks and other birds in one village were killed and the Malaysian economy was devastated due to the outbreak of avian influenza (Gustri, 2004). During September 1998, there was the emergence of the zoonotic virus, which is also known as Nipah virus Infection (NIV) in Malaysia, which is transmitted from animals to humans. Almost 900,000 pigs were killed in the three affected states and the transport of pigs within the country was banned to prevent the spread of the virus (Mike, 2001).

Developing countries like Malaysia are facing great challenges in sustainable development. Deforestation, water quality, household waste and industry waste are some of the reasons that cause environmental deterioration. The Malaysian Ministry of housing and local government (2008) reported that solid waste consist of household waste (36.5%) paper (27%), plastic (16.4%), steel (3.9%), glass (3.7%) and others (12.5%). Every day, over 15,000 tons of rubbish is produced in the country. The sources of air pollution come from industries (including power stations), motor vehicles and open burning activities (Department of Environment, 2006). In 2009, the Department of Environment (DOE) found 20,702 water polluted sites. These include manufacturing industries (47.15%), sewage treatment plants (46.74%), animal farms (3.72%) and agro-based industries (2.39%). Therefore, there is a need for Malaysian consumers to shift towards a more sustainable consumption pattern. Consumers also tend to link animal welfare issues with environmental sustainability, food safety, food quality and health. This appears to be the reason why consumers want to purchase green foods or green products (Grunet et al., 2004).

Green purchasing behaviors are different from country to country. Although, green products exist in Malaysia, the concept of green is still very new to the Malaysian. The market for green products in Malaysia is at the beginning of its development. Since Malaysia is a multi racial and cultural society it is inevitable for green producers to understand their potential consumers well. Thus, the objective of the study is to investigate Malaysian awareness towards the green concept, green food and their intention to purchase such products given all the advantages of such products in developing sustainable agriculture, the conservation of natural resources and environmentally friendly production processes.

MATERIALS AND METHODS

Conceptual framework

The theory of planned behavior (TPB) as proposed by Ajzen (2002) is a leading framework in the literature which is used in this study to examine Malaysian consumers' behavior. The theory of planned behavior provides a framework that is used to investigate the factors that can influence consumers' behavioral choices. It postulates that there are three independent determinants of behavioral intention which are attitude, subjective norms and perceived behavioral control. Intention is an indicator of the extent to which consumers are willing to try something and how much effort they are willing to put into a particular behavior. Therefore, the stronger the intention of an individual to perform a particular behavior, the greater the likelihood of a particular behavior being performed (Ajzen, 1991).

In this study, TPB was used to assess the attitude of consumers' towards a particular behavior, the subjective norms and the perceived behavioral control to determine the consumers' intention to purchase green foods. TPB postulates that the attitudes of consumers towards consuming green foods are made up of their belief and awareness towards the concept of green foods. Consumers' attitudes and their buying behavior may also be based on external factors such as their socio demographic profiles and backgrounds like their age, education level, gender, income, religious status, knowledge, information and exposure to advertisements. All these factors contribute to the consumers' confidence and trust towards consuming green foods which leads to the consumers adopting a positive attitude.

In addition, the subjective norms which were considered in this study includes details of the consumers' parents and close friends, as well as the opinions of the government, environmentalists, lecturers and the changing lifestyles in the community as their society becomes more affluent and educated as this could also influence consumers' behavior towards their purchasing decisions concerning food products. What is more, consumers' are more likely to perform a particular behavior when they feel that they can control the activity they are performing and they prevent themselves from carrying out a particular behavior which they feel they have no control over. There are many control factors which may inhibit consumers from performing a particular behavior such as food safety, environmental friendliness, health consciousness and animal welfare. Therefore, the stronger the intention of consumers to consume green foods, the greater the likelihood that a particular behavior will be performed.

Research hypotheses

Food consumption patterns are different from country to country. Consumers' lifestyles have changed due to a faster changing world and the rapid growth of the economy through increasing consumer consumption worldwide. Based on previous studies, the following hypotheses referring to the awareness towards the green concept

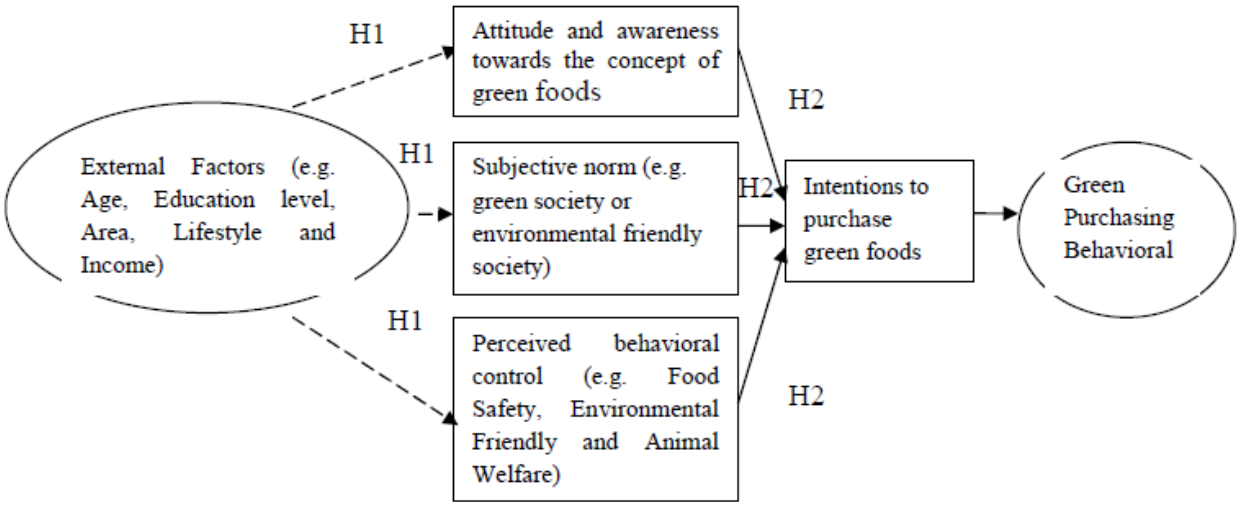

Figure 1. The conceptual framework of TPB applied to green food consumption among Malaysian consumers. Source: An adapted and modified model from Ajzen (2002).

and the intention to consume green foods were proposed (Figure 1).

H_1: There is no significant relationship between the socio-demographic factors such as gender, area, age, ethnic group, education level, lifestyle and income with the consumers' awareness towards the green concept.
H_2: There is no significant relationship between the socio-demographic factors such as gender, area, age, ethnic group, education level, lifestyle and income with the consumers' intention towards green foods consumption.

Sample and questionnaire

A randomized sample was made where 1355 respondents were interviewed via structured questionnaires to test their awareness and perception towards green food consumption. A pilot study was carried out for this study to ensure the questionnaire was acceptable and easily understood by the respondents. Supermarkets such as Cold storage, Jusco, Tesco, Giant and Carrefour were chosen from each state because supermarkets are the most appropriate places to collect data since most green food products are widely available there and consumers from all walks of life shop at supermarkets. The questionnaire was divided into three sections and contained straight forward questions. The questions were measured using a seven point Likert scale.

The first section of the questionnaire talked about the respondents' awareness and knowledge towards green foods. Here, open-ended questions were used. Intention was measured by asking statements like "I intend to purchase green foods in the near future". Finally, the last section asked for the socio-demographics information such as gender, ethnic group, the state of origin, area, marital status, age, household size, education level, income and lifestyle.

Method of analysis

The data collected was analyzed using SPSS 16.0. To accomplish the objective of this study, a reliability analysis (Cronbach's alpha) was performed and descriptive statistics were given. Since the objective of the study is to investigate Malaysians' awareness of the green concept and green food and their intention to purchase green foods, chi-square tests of independence were used in order to examine the extent to which the selected socio-demographic characteristics created and influenced the respondents' awareness and intention towards green food consumption.

RESULTS

The Cronbach's alpha value, which was retrieved from the reliability analysis for attitude and intention, subjective norms, perceived behavioral control and intentional questions, was 0.946. This high value shows that there was consistency among the theory of planned behavioral items and one can conclude that the model is fit for conducting this study.

Socio-demographic information

A descriptive analysis is use to describe the population and the results of the socio-demographic profile of the respondents of this study. The data values such as the demographic profiles include age, income level, education level, gender, race, residential area, marital status and household size, all of which are analyzed using a descriptive analysis. By using a descriptive analysis, a frequency distribution clearly shows how the data values such as the demography which includes the respondents' gender, area, age, income, ethnic group, education level and lifestyle can affect the variables in this research.

In this study, most of the respondents are females 728 (53.7%) as compared to male 627 (46.3%). As can be seen in Table 1, the majority of the respondents are Malays (57.1%), followed by Chinese (30.6%) and

Table 1. Socio demographic profile of the respondents (n = 1,355).

Characteristic			
Gender	**Percentage**	**Education level**	**Percentage**
Male	46.3	Never been to school	1.5
Female	53.7	Primary school	2.9
		Secondary school	11.4
Ethnic (Race)		Diploma	25.5
Malay	57.1	Bachelor	45.8
Chinese	30.6	Master	10.0
Indian	12.3	Ph.D	3.1
Area		**Income**	
Urban	72.0	Below 1500	9.3
Suburb	28.0	1501-3000	34.5
		3001-4500	42.4
Marital status		4501-6000	7.3
Single	39.3	Above 6001	6.4
Married	60.7		
		Household size	
Age		1-3	21.8
Below 25	16.7	4-6	62.0
26-40	45.8	7-9	13.9
41-60	31.7	10 above	2.2
Above 60	5.9		

Indians (12.3%) and the numbers of respondents from urban and suburban areas are 976 persons (72.0%) and 379 persons (28.0%) respectively.

More than half of the respondents are married (60.7%) and the largest age group is 26 to 40 years (45.8%). The education level of the respondents is categorized into seven categories. 1.5% of the respondents never went to school, 2.9% have completed primary school, 11.4% are secondary school graduates, 25.5% of the respondents completed their diploma, 45.8% of the respondents graduated with a bachelor degree, 10.0% had complete their master degree and 3.1% are Ph.D holders.

In terms of income distribution, this study found that at least 42.4% of the respondents have an income between RM 3,001 to RM 4,500 per month and a smaller percentage of the respondents (6.4%) have incomes above RM 6,001. The size of household is one of the vital characteristics which influences the food consumption patterns and food preferences of the respondents. As shown in Table 1, most of the respondents live in a household having between 4 and 6 people (62.0%), while only 2.2% lived in a household with more than 10 inhabitants.

Consumers' awareness, perception and intention towards green foods

Tables 2 and 3 shows the mean scores and the percentage of components included in the TPB questions using a seven-point scale (1 to 7). The results show that consumers are more concerned about their health, food safety, protection of the environment and animal welfare. Most of the consumers are aware of the fact that green foods are healthier, safer to consume and help to protect the environment under the principle of sustainable agricultural development. They also believed that green foods use less chemicals, pesticides, herbicides or insecticides and that it consistently achieves a higher standard of animal health and welfare than conventional foods. The majority of the respondents stated that being in a green society or environmentally friendly society makes them to be more aware of green foods in Malaysia.

Overall, the previous analysis indicates that the respondents are aware and have a positive perception towards green foods in Malaysia due to the rapid change in food consumption patterns and consumers' lifestyles and the majority of the respondents have the intention to purchase green foods in the near future.

Chi-square analysis

The results of the chi-square tests indicate that some of the selected socio-demographic variables have significant relationships with consumers' awareness towards the green concept in Malaysia and their intention to

Table 2. Respondents' awareness towards the green concept.

Statement	Frequency		(%)	
	Yes	No	Yes	No
Have you heard about the green concept?	708	647	52.3	47.7

Table 3. Respondents' perception and intention towards green foods consumption in Malaysia.

Statement	Likert scale score* (%)							Mean
	1*	2*	3*	4*	5*	6*	7*	
In my opinion, green foods are healthier, have better quality and are safer than conventional foods.	1.0	1.5	2.8	11.4	20.7	42.5	20.1	5.57
To me, green foods will help to protect the environment.	0.9	1.5	2.7	13.2	25.2	41.5	15.0	5.45
I believe green foods can prevent unnecessary animal suffering since research on green foods does not perform experiments on animals.	2.0	2.4	4.4	17.6	23.9	36.2	13.5	5.22
Being in a green society or an environmentally friendly society makes me more aware of green foods.	1.0	4.0	4.1	21.0	26.1	29.7	14.1	5.13
I intend to purchase green foods in the near future.	4.0	3.9	6.7	18.5	24.1	27.8	15.1	4.98

*1 = Strongly disagree; 7 = Strongly agree.

Table 4. Chi-square values and respondents' awareness of the green concept in Malaysia.

Socio-demographic variables	χ^2
Gender	0.229
Race	3.638E2*
Area	49.444*
Age	58.511*
Education level	39.751*
Income	26.960*
Lifestyle	3.445

*Significant at 1% level.

purchase green foods in the near future. The socio-demographic variables that were chosen in this study included gender, race, area, age, education level, income and consumers' lifestyle. Lifestyle was classified into seven categories (that is, care for food safety, care for the environment, care for animal welfare, health conscious, athletic (into sport), religious and vegetarian). The consumer's lifestyle might also influence their awareness or intention towards purchasing green foods.

Table 4 shows the chi-square tests which were used to test whether there are significant differences between selected socio-demographic characteristics and consumers' awareness towards the green concept in Malaysia. The results showed that a significant interaction was found between the geographical area and the awareness of the green concept in Malaysia . It shows that consumers from urban areas were more aware of the green concept than consumers from suburban areas (χ^2 = 49.444, p <0.01) and Chinese Malaysians were more aware of the green concept than Malay and Indian Malaysians (χ^2 = 3.638E2, p <0.01). In terms of age, consumers who are below 35 years old were more aware of the green concept (χ^2 = 58.511, p <0.01). Furthermore, consumers who have a higher education level (Bachelor and above) (χ^2 = 39.751, p <0.01) and higher income (above RM 3001) were more aware of the green concept in Malaysia than the other income groups (χ^2 = 3.445, p <0.01).

The information presented in Table 5 shows the chi-square test results for the socio-demographic variables and consumers' intention to purchase green foods in the near future. The results show that consumers who have a

Table 5. Chi-square values and respondents' intention to purchase green foods in the near future.

Socio-demographic variables	χ^2
Gender	0.435
Race	2.804
Area	1.892
Age	0.806
Education level	1.137E2*
Income	1.344E2*
Lifestyle	22.810*

*Significant at 1% level.

higher education level (Bachelor and above) are more likely to purchase green foods than the respondents who have a low education level (χ^2 = 1.137E2, p <0.01). In addition, the respondents who have a higher income (RM 3001 and above) were more intent on purchasing green foods in the near future (χ^2 = 1.344E2, p <0.01). In terms of the respondents' lifestyles, the respondents who are health conscious and more concerned about food safety were more intent on purchasing green foods than other consumers (χ^2 = 22.810, p <0.01).

DISCUSSION

The theory of planned behavior was used in this study to investigate consumers' awareness and intention towards green food consumption in Malaysia. It is important for the food industry to know the consumers' intention topurchase green foods so that they can produce food products which can satisfy consumers' needs and wants. The influence of consumers' attitude or perception, subjective norms (green society or environmentally friendly society) and the perceived behavioral control (food safety, environmental protection and animal welfare) over the consumption of green foods contribute to making them more aware and conscious about green foods in Malaysia. External variables such as the selected socio-demographic variables like race, area, age, education level and income have a strong relationship with consumers' awareness and perception towards green food consumption.

The results suggested that consumers with higher education levels, higher income, who live in urban areas, are Chinese and age below 35 year old were more likely to be aware of and have a positive perception towards green food consumption. The results also show that consumers who were more concerned with food safety issues have higher intention to purchase green foods in Malaysia.

The findings also indicate that the majority of the consumers had the intention to purchase green foods in the near future. Socio-demographic variables such as education level, income and lifestyle have a strong relationship with the consumers' intention to purchase green foods. Consumers who have higher education levels are more intent on purchasing green foods. This is due to the fact that they are more aware of the advantages of consuming green foods such as the health and nutrition aspects as well as the fact that there is little or no use of chemicals, they are safer, environmentally friendly and are concerned about animal welfare issues. Higher income consumers' also have a higher intention to purchase green foods in the near future because the price of green foods is 10 to 50% higher than the conventional foods. Thus, green food producers should develop their marketing strategies to target middle and high income consumers who can afford to purchase green foods at the stipulated prices.

Thus, understanding consumers' awareness and intention towards green food consumption is very important for any food industry or food marketer, especially as the food they produce is critical for food safety, environmental products and healthy products. Cases such as the Nipah virus and bird flu variant H5N1 which were mentioned earlier have caused consumers to be more aware about the food they purchase and consume.

Although, there is growing concern among consumers highlighting the importance of food safety, environmentally friendly products, animal welfare and healthy food products, the implementation of green production and marketing strategies are still not widely practiced in the Malaysian food industry. Since the market for green foods is still a new concept to Malaysians, more effort should be carried out to disseminate the green concept and the consumption of green food to Malaysians in general. Therefore, food producers or marketers need to understand consumers' behavior and how Malaysian consumers' purchasing behavior is affected by their socio-demographic characteristics.

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