



# Gender attitude towards environmental protection: a comparative survey during COVID-19 lockdown situation

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## Abstract

Attitude towards environmental protection is a crucial component in environmental safeguard psychology. It is a psychological tendency expressed by evaluating the environmental gender attitude with favour or disfavour. This study aimed to compare the attitude level of male and female trainees towards environmental protection based on personal, psychological and sociocultural variables by using an ex post facto research design. The research population was composed of the trainees ( $N=177$ ) who participated in the online training programmes organized from April 07 to May 31, 2020, by the Centre for Advanced Agricultural Science and Technology (CAAST) for Climate Smart Agriculture and Water Management (CSAWM), MPKV, Rahuri, Maharashtra, during COVID-19 lockdown period. In this study, an online survey method was used. The research instrument was a well-designed and structured online questionnaire using a Google Form consisting of two sections. The first section consisted of 11 independent variables of personal, psychological and sociocultural characteristics. The second section consisted of 17 environmental attitude questions focusing on closed structure questions with a five-point Likert scale, i.e. Strongly Agree to Strongly Disagree. The results revealed that age, training received, membership of environmental societies or organizations, courses taught, waste management and social media use significantly affect the trainees' attitudes to environment protection. The female respondents had a favourable environmental attitude when compared with the male respondents. Therefore, the study concluded that a set of factors influences the gender attitude of the online trainees. These factors alone cannot change trainees' attitudes towards environmental protection. Accordingly, necessary and appropriate conditions should be provided to change the attitude of male trainees for environmental protection. Sustained support is necessary to efficiently understand the role of gender in environment protection through government policies, social media, policymakers, scientists, extension workers, research organizations, various training programmes, participation of students and faculty in the environmental cleanliness drive and awareness programs, etc.

**Keywords** Gender attitude · Environmental protection · Comparative survey · COVID-19

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## 1 Introduction

World over, people are facing several environmental issues such as the rapid growth of industrialization, deforestation, excessive use of non-degradable substances, alarming population growth, rural areas demanding urban conveniences, endless urbanization (Li et al. 2005), excessive use of vehicles, globalization and liberalization (Davis 1998; Baykal and Baykal 2008). While humanity desires a luxurious life, it does not consider the environmental problems in its concepts, thinking, behaviour and achievements (Watson and Halse 2005; Negev et al. 2010). This approach to life urgently demands a thorough education to internalize the importance of sustainable environmental protection on a sustainable basis. Environmental safeguard is one of the goals in the sustainable development agenda (UN, 2018). It seeks an increasing commitment from the academics and policymakers (UN 2016; Baker 2016; Robinson 2004), from the environmental, economic and social perspectives (Giddings et al. 2002). Sustainable development and preservation of natural resources are possible with grassroots and local communities (Rauch 2002; Giddings et al. 2002). Nowadays, waste management problems prevail more in urban areas than in rural areas. The increasing waste disposed of without classification creates environmental pollution (Bin et al., 2019), and it is a big challenge to the sustainable development of any society (Bin et al., 2019). For proper management, in this context, a wide variety of programmes, institutional efforts, awareness activities and research are being intensively undertaken for the past few years (Huhtala 1999; Barr et al. 2001; Tonglet et al. 2004). In 2015, the total accumulation of municipal solid waste was 3270 million tons, contributing to 70% of waste production among East-Asian countries (NBSC 2016). India's municipal solid waste (MSW) will increase significantly due to its efforts to attain an industrialized-nation status by 2020 (Gidde et al. 2008; Gupta and Arora 2016; Sahu et al. 2014; Sharholly et al. 2008). The household is one of the major sources of municipal solid waste (Rada et al., 2013). According to the Central Pollution Control Board (CPCB 2016), urban India produced 62 Mt of MSW in 2015, or 169,864 t/day or 450 g/capita/day. About 82% (50 Mt) of MSW was collected. The remaining 18% (12 Mt) consisted of litter and air pollution. These are the major causes of environmental damage and dilute people's immune systems. During 1947, 2001 and 2011, the urban solid waste accumulated was 31 and 48 Mt, respectively (Rawat et al., 2013; Singh et al., 2011). At this rate, the total urban MSW 165 Mt, 230 Mt and 436 Mt will be during 2030, 2041 and 2045, respectively (Annepu 2012; WtR 2014). From this perspective, the management of natural resources focusing on environmental protection must incorporate the local knowledge, experience, values and people's perception. Therefore, waste sorting and recycling of wastewater are of utmost importance joint efforts. It can help reduce 30–40% waste, reproduce new goods and address the existing pressures on scarce water supplies (Bin et al., 2019; Chen et al., 2013). But it is not easy to understand the social environment in relation to the ecological milieu (Silva et al., 2013). However, the local communities have been living since ages with the surrounding environment, and they highly depend on the natural resources for food, fuelwood (An et al. 2002; Pote et al. 2006), medicinal herbs (Dzerefos and Witkowski 2001), honey and other products (Fabricius and Burger 1997). Therefore, they understand environmental issues better for they possess traditional ecological knowledge, which helps achieve environmental protection, biodiversity conservation (Berkes et al., 2000; Song et al. 2010), minimizing the impact on the environment (Venter et al. 2016) and coping with the degradation of natural ecosystems (Potapov et al. 2011). It is worth noting here that Environmental Attitudes (EA) are a psychological tendency expressed by evaluative responses to the natural environment

with some degree of favour or disfavour (Milfont and Duckitt, 2004). Environmental attitudes are a latent construct; therefore, we cannot observe them directly. We can only infer it from overt responses (Himmelfarb, 1993). We can also use direct self-report methods or implicit measurement techniques (Krosnick, Judd, & Wittenbrink, 2005). This study seeks to determine the positive and negative attitudes of the male and female respondents who play a significant role in the conservation of the environment and adoption of eco-friendly practices with specific objectives which are: (1) to study the personal, psychological, communicational and sociocultural characteristics of the trainees of online training programs of COVID-19 lockdown period of April 07 to May 31, 2020, (2) to study and compare the attitude level of male and female trainees towards environmental protection, (3) to determine the relationship between personal, psychological, communicational and sociocultural characteristics of the trainees and attitude towards environmental protection.

This paper provides valuable information concerning ecological protection with a gender perspective that can be applied to other environmental management scenarios where individual attitudes are taken into consideration.

### 1.1 Purpose of the research

Men and women have various roles and responsibilities in our families, our societies and our cultures. They are involved in the management and conservation of biodiversity according to their perceived environmental protection experience. A positive attitude of gender is an essential factor concerning environmental activities. It has been contributing significantly to become conscious about the environmental problems and in finding solutions to them. Therefore, the importance of gender attitude should not be ignored while cogitating on environmental protection. From this point of view, it is necessary to understand environment-related problems and find appropriate solutions. Besides, the amount of research conducted on gender differences and attitudes towards environmental protection is relatively sparse. With this background, this paper examines the attitudes of the trainees towards environmental protection. The respondents of this study are the trainees who attended many online training programmes conducted by the Centre for Advanced Agricultural Technology for Climate Smart Agriculture and Water Management. Therefore, training received as a variable is helpful because it is one of the psychological components that can improve skills and change the human mindset. It is beneficial to students, faculty and policymakers to design and implement environmental protection programmes. Secondly, membership of environmental organizations/societies is another variable. From time to time, such organizations organize various environmental protection programmes, which are practical tools to conscientize the respective members. This investigation delves into such variables in its approach. This research is also important for students to sensitize and increase awareness of environment protection and set future researchers' trends in the supplementary field. The general aim of this investigation is to understand the gender differences and attitudes towards environmental protection. The following questions are addressed in the context of this general aim:

- (1) What are the gender differences in attitudes towards environment protection?
- (2) Is there any significant difference between the attitudes of gender towards environmental protection?

## 1.2 Theoretical Background

### 1.2.1 Gender differences in environmental concern

Gender issues in environmental protection involve identifying the influence of gender roles, responsibilities and their relations to the environment's use, management and conservation. Women and men's roles in environmental protection vary from one country to another and within countries and cultures. It mainly depends on the knowledge, experience, awareness, needs, risk and vulnerabilities and decision-making power of the respective gender (Soma Chakrabarti 2020). Gender influences all aspects, including social, economic and health (Nierenberg, 2002). In the context of environmental concerns, it is a complex and multidimensional concept that can be defined as the extent of men and women emotionally and sensitively committed to environment-related problems and provide support to various environmental protection activities (Chenyang and Aaron, 2015). Gender refers to the socially constructed qualities of women and men in relation to norms, roles and relationships between women and men and the biological differences between males and females (Osterberg 1996). Gender difference as a social construct (Gilligan, 1982; Hustinx and Lammertyn, 2003) is a significant factor for formulating social policies and social welfare (Taniguchi, 2006).

### 1.2.2 Attitude in environmental concern

Attitude is how an individual feels towards someone, an object, an institution, a method, a subject, a thought, an idea, a situation or an event (Chauhan et al., 2017). An attitude is an approach to life. It reflects behaviour and determines the outcome, learned tendency, positive or negative feeling towards any psychological object. It influences our action, knowledge of a situation, feeling or emotion, tendency to respond, determinants of behaviour, mental and neutral state of readiness. The formation of environmental attitudes is more critical for attaining environmental sustainability (Müderrisoglu and Altanlar, 2011). There is an urgent need to achieve environmental sustainability by influencing the attitude of the people towards effective use and management of natural resources (Munasinghe 2020).

## 1.3 Hypotheses

A research hypothesis represents the relation between two or more measurable variables and tentative solutions to solve a problem (Ary et al. 1984). It is a conjectural statement of the relation between two or more variables (Kerlinger 1956). A formal statement presents an expected relationship between independent and dependent variables (Creswell 1994) and relational propositions (Kerlinger, 1956). It should help the researcher determine the implications of examining the stated relationship between two or more variables. With such claims in the attitudinal research, this investigation hypothesizes the following:

- (1) Men and women possess differential, personal, socio-economic and psychological characteristics.
- (2) Men and women have distinctive attitudes to environmental protection.

- (3) The individual, socio-economic and psychological attributes of men and women have a significant relationship with gender attitude.

## 2 Method

### 2.1 Research model

In this investigation, we have used a survey model. The responses were collected through the Google Form with a well-designed online tool during the COVID-19 lockdown period. It was necessitated by the World Health Organization (WHO) declaration that the COVID-19 outbreak was a global pandemic on March 11, 2020 (Cucinotta and Vaneli, 2020), which has affected all countries and territories of the world (Munasinghe, 2020). There is an urgent need to adopt sustainable environmental practices globally to meet the demand in the context of health facilities, food and water shortage and creating awareness during the COVID-19 pandemic as the situation arises in the future (Munasinghe, 2020). This investigation was conducted under the aegis of the World Bank Aided- Indian Council of Agricultural Research - National Agricultural Higher Education Project (NAHEP), New Delhi, at the Centre for Advanced Agricultural Science and Technology (CAAST) for Climate Smart Agriculture and Water Management (CSAWM), MPKV, Rahuri, the Social Sciences through the Agricultural Extension & Communication. This centre has developed a model for organizing online training programmes during the COVID-19 lockdown period. It has been organizing several training programmes for strengthening Climate Smart Agriculture and Water Management practices. A survey model is a research approach that can describe an event in the past or present (Karasar, 2007).

### 2.2 The Questionnaire

As mentioned above, in this investigation, we used a structured online questionnaire consisting of 11 independent variables and 1 dependent variable. The dependent variables consisted of 17 environmental attitude questions. The 17 questions mainly consisted of closed structure questions with a five-point Likert scale, i.e. Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. In this article, we focused mainly on gender attitude answers to items about the environment. Accordingly, we designed a Google Form by discussing with subject experts and reviewing the research papers, policy papers and online survey websites. Following the suggestions received from the subject experts, we modified the form, which consisted of two parts. The first part consisted of the profile of the participants, communication and related psychological variables, while the second part consisted of 17 items concerning attitudinal statements about the environment. After the finalization of the online questionnaire, we undertook the actual survey.

### 2.3 Study area and Selection of sample

The World Bank Aided - Indian Council of Agricultural Research-National Agricultural Higher Education Project, New Delhi, has sponsored the Centre for Advanced Agricultural Science and Technology (CAAST) for Climate Smart Agriculture and Water Management (CSAWM), MPKV, Rahuri, Maharashtra, India. This centre has developed a model for organizing online training programmes during the COVID-19 lockdown period and has been organizing several training programmes in the

thematic areas of Climate Smart Agriculture and Water Management. Accordingly, each training programme had a WhatsApp group of participants for the smooth conduct of the training programme. All the training-related information was shared through these groups. PG, PhD scholars, scientists and faculties from all over the country were trained in this online training. The online data were collected for this investigation from April 07 to May 31, 2020. During this period, this centre had organized 20 online training programmes of 3 days to 1-week durations. Through formulated WhatsApp groups, the online questionnaire was circulated. The participants were asked to fill in the online questionnaire form. After one month, we removed this questionnaire. Accordingly, we collected the trainee participants' data, i.e. PG, PhD students, scientists, subject experts and faculties, through an online Google Form during the COVID-19 lockdown period. The online trainee participants were considered for sampling. In all, the centre had received 177 ( $N=177$ ) trainees' responses. The responses consisted of 133 male and 44 female trainees. Thus, a total of 177 ( $N=177$ ) respondents were considered for this investigation.

## 2.4 Research design

This investigation quantitative research method was used with an *ex post facto research* design. The main aim of the *ex post facto* study is to determine the cause and effect of a relationship or association between two or more than two variables (Gay, Mills & Airasian, 2011). A research design is the plan, structure and investigation strategy to answer research questions and control variance (Kerlinger, 1964). An *ex post facto research* design is used by researchers who do not directly control the independent variables and cannot be manipulated (Black, 1999). A research design is a plan or proposal to conduct research, which entails the intersection of philosophy, inquiry strategies and specific methods (Sivakumar et al., 2017). The *ex post facto* research is a systematic empirical inquiry. The researcher does not directly control the variables because their manifestations have already occurred or are inherently unmanipulable (Kerlinger, 1964). The literal meaning of *ex post facto* is 'from what is done afterwards'. The *ex post facto* design was applied to this investigation because the independent variables, the researcher cannot directly manipulate. After all, it is something that occurs directly in the field.

## 2.5 Statistical tools

The study was based on an online survey using a structured questionnaire. The data collected through Google Form include standard deviation, frequencies and percentages and were calculated for descriptive data.

## 2.6 Variables

Data on 13 independent variables and one dependent variable were collected. Seventeen items as dependent variables of environmental concern were used. The detailed information of the variables is presented in Table 1.

**Table 1** Coding, mean, standard deviations and sample sizes for the variables used in the study

Sl. No.	Variable	Coding	Mean	SD	N	
					Male	Female
A.	Gender attitude towards environmental protection					
1.	I think it is not my responsibility to protect the environment	1 (Strongly Agree to) to 5 (Strongly Disagree)	3.38	1.64	133	44
2.	I avoid long rides on the motorcycle to minimize air pollution	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.28	0.94	133	44
3.	I feel the use of solar-based equipment to minimize pollution	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.67	0.73	133	44
4.	I am worried wherever read about the worldwide environmental tragedies	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.55	0.70	133	44
5.	I think community efforts will be helpful for the environmental protection	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.69	0.73	133	44
6.	I think the use of plastic bags for food packaging cause destructive effects on the environment	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.46	0.97	133	44
7.	I feel organic food minimizes the risk of environmental damage	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.67	0.72	133	44
8.	Legal measures are better option to protect environmental damages	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.41	0.83	133	44
9.	I think washing of cloths, animal, machinery in natural water bodies cause harmful effects to the environment	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.71	0.69	133	44
10.	I feel the green zone surrounding the home improves the air quality	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.68	0.75	133	44
11.	Excess use of chemical pesticides cause hazardous effects to the environment	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.68	0.74	133	44
12.	I believe that organic fertilizers help sustain environmental balance	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.73	0.67	133	44
13.	Green manuring is an effective source to promote an eco-friendly environment for agricultural development	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.53	0.76	133	44
14.	I think the use of dust bins for wastage food management avoid environmental pollution	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.65	0.66	133	44
15.	I feel biodegradable goods are helpful in the environmental protection	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.65	0.68	133	44
16.	I think recyclable things are minimized environmental damages	5 (Strongly Agree to) to 1 (Strongly Disagree)	4.68	0.78	133	44
17.	I think it is meaningless to buy paper bags instead of nylon bags given for free in the market	1 (Strongly Agree to) to 5 (Strongly Disagree)	3.54	1.59	133	44
B.	Profile, Communicational and Psychological					
1.	Profession	2=faculty 1=Student	1.45	0.50	133	44
2.	Education	Actual years of formal schooling	18.90	1.69	133	44

Table 1 (continued)

Sl. No.	Variable	Coding	Mean	SD	N	
					Male	Female
3.	Service experience	The number of years spent	5.11	7.82	133	44
4.	Age	Actual age in years	30.40	8.44	133	44
5.	Training received	Number of training received	1.64	3.23	133	44
6.	Membership of Environmental Organization/Societies	1=Yes, 0=No	0.16	0.37	133	44
7.	Place with longest duration	2=Urban, 1=Rural	1.29	0.46	133	44
8.	Course taught	1=Yes, 0=No	0.48	0.50	133	44
9.	Awareness about environmental days	1=Aware 0=Not aware	5.49	1.14	133	44
10.	Participation in environmental-related activities	1=Participated 0=Non-participated	5.80	1.98	133	44
11.	Management of wastes	2=Always 1=Sometime 0=Never	22.47	7.11	133	44
12.	Use of social media	2=Always 1=Sometime 0=Never	9.32	2.40	133	44
13.	Knowledge about acts-related environment protection	1=Yes, 0=No	6.12	1.61	133	44



**Table 2** Distribution of the respondents according to their profession

Sl. No.	Category	Respondents		
		Male (N=133)	Female (N=44)	Overall (N=177)
1.	Faculty	65 (48.87)	15 (34.09)	80 (45.20)
2.	Student	68 (51.13)	29 (65.91)	97 (54.80)
	Total	133 (100.00)	44 (100.00)	177 (100.00)
	Average	1.49	1.34	1.45

### 3 Results

Table 2 reveals that more than half (51.30 %) of the male (51.30 %) respondents were students, while 48.87 % of the respondents were the faculty. In the case of female respondents, more than three-fifths (65.19 %) of the respondents were students, and about one-third (34.09 %) of the respondents were faculty. The combined data showed that a majority (54.80.00 %) of the respondents were in the students, while 45.20 % of the respondents were the faculty. The average professions of the male and female respondents were 1.49 and 1.34, respectively. The combined average profession of the respondents was 1.45.

Table 3 shows that more than half (58.65 %) male respondents were post-graduates, whereas more than one-third (33.08 %) and less than one-tenth (7.52 %) of the respondents were doctoral and graduate degree holders, respectively. The diploma holders were 0.75 % of the respondents. Similarly, 56.82 % of the female respondents were post-graduates, while 34.09 % were doctorates and 9.09 % of respondents were graduate degree holders. There were no female participants with a diploma. At the overall level, 58.19 % of the respondents were post-graduates, whereas one-third (33.33 %) and less than one-tenth (7.91 %) of respondents were doctorates and graduate degree holders, respectively. The percentage of diploma holders was 0.56. The average education of the male and female respondents was 18.90 standards and 18.91 standards, respectively. At the overall level, the average education of the respondents was 18.90 standard.

Table 4 shows that less than half of the male (41.35 %) respondents were of middle-level service experience. In contrast, one-third (39.10 %) and one-fifths (19.55 %) of the respondents belonged to less and more service experience, respectively. It was further

**Table 3** Distribution of the respondents according to their education

Sl. No.	Degree	Respondents		
		Male (N=133)	Female (N=44)	Overall (N=177)
1.	Diploma	01 (0.75)	–	0 1(0.56)
2.	Graduation	10 (7.52)	04 (9.09)	14 (7.91)
3.	Post-Graduation	78 (58.65)	25 (56.82)	103 (58.19)
4.	Doctorate	44 (33.08)	15 (34.09)	59 (33.33)
	Total	133 (100.00)	44 (100.00)	177 (100.00)

**Table 4** Distribution of the respondents according to their service experience

Average Category (Yrs)	18.90	18.91	18.90
	Respondents		Overall (N=177)
	Male (N=133)	Female (N=44)	
1. Less (Up to 1.20)	52 (39.10)	27 (61.36)	79 (44.63)
2. Medium (1.21 to 9.02)	55 (41.35)	11 (25.00)	66 (37.29)
3. More (9.03 and above)	26 (19.55)	06 (13.64)	32 (18.08)
Total	133 (100.00)	44 (100.00)	177 (100.00)
Average	5.78	3.07	5.11

noticed that more than half of the female (61.36 %) respondents were with less service experience, followed by respondents with 25.00 % and 13.64 % belonged to the medium and more service experience category, respectively. At the overall level, 44.63 % of the respondents belonged to the less service experience category. In contrast, more than one-third (37.29 %) and less than one-fifths (18.08 %) of the respondents had medium and more service experience, respectively. The average service experience of the male and female respondents was 5.78 years and 3.07 years, respectively. At the overall level, the average service experience of the respondents was 5.11 years.

It is noted from Table 5 that 81.20 % of the male respondents belonged to the middle age group, followed by 17.30 and 1.55 % of the respondents who belonged to the old and young age group, respectively. In the case of female respondents, more than four-fifths (86.36 %) of the respondents had a middle-age group, followed by 11.37 and 2.27 % respondents belonged to the old and young group, respectively. At the overall level, 82.49 % of the respondents were of the middle age group, whereas 15.82 and 1.69 % respondents belonged to the medium and young group, respectively. The average age of the male and female respondents was 31.33 years and 27.55 years, respectively. At the overall level, the average age of the respondents was 30.40 years.

It can be observed from Table 6 that more than two-fifths of the male (48.12 %) respondents did not receive any training, followed by 33.08 and 18.80 % of the respondents who had received 1 to 3 and 4 and above training programmes, respectively. Regarding female respondents, more than half of the female (52.27 %) respondents did not receive any

**Table 5** Distribution of the respondents according to their age

Sl. No.	Category (Yrs)	Respondents		Overall (N = 177)
		Male (N = 133)	Female (N = 44)	
1.	Young (Up to 35)	02 (1.55)	01 (2.27)	03 (1.69)
2.	Middle (36 to 50)	108 (81.20)	38 (86.36)	146 (82.49)
3.	Old ( 51 and above)	23 (17.30)	05 (11.37)	28 (15.82)
	Total	133(100.00)	44 (100.00)	177 (100.00)
	Average	31.33	27.55	30.40

**Table 6** Distribution of the respondents according to their training received

Sl. No.	Category (Score)	Respondents		
		Male (N=133)	Female (N=44)	Overall (N=177)
1.	No training	64 (48.12)	23 (52.27)	87 (49.15)
2.	1 to 3 training	44 (33.08)	13 (29.55)	57 (32.20)
3.	4 and above training	25 (18.80)	08 (18.18)	33 (18.64)
	Total	133 (100.00)	44 (100.00)	177 (100.00)
	Average	1.62	1.68	1.64

training, followed by 29.55 and 18.18 % of the respondents who had received 1 to 3 and 4 and above training, respectively. Less than half (49.15%) of the respondents did not receive any training at the overall level. However, 32.20 and 18.64 % of respondents had attended 1 to 3 and 4 and above training programmes, respectively. The average training received by male and female respondents was 1.62 and 1.68, respectively. At the overall level, the average training received by the respondents was 1.64.

It can be viewed from Table 7 that more than four-fifths of the male (84.96 %) respondents were not members of any environmental organization/society. In contrast, less than two-fifths (15.04 %) of the respondents were members of environmental organizations/societies. In the case of female respondents, more than three-fourths (79.55 %) of the respondents were not members of any environmental organization/society, followed by 20.45 % of the respondents who were members of environmental organizations/societies. At the overall level, 83.62 % of the respondents did not have membership of any environmental organization/society, followed by 16.38 % of the respondents who were members of environmental organizations/society. The average membership obtained by the male and female respondents in any environmental organization/society and the female respondents

**Table 7** Distribution of the respondents according to their membership of environmental organizations/societies

Sl. No.	Category	Respondents		
		Male (N=133)	Female (N=44)	Overall (N=177)
1.	Member	20 (15.04)	09 (20.45)	29 (16.38)
2.	Not member	113 (84.96)	35 (79.55)	148 (83.62)
	Total	133 (100.00)	44 (100.00)	177 (100.00)
	Average	0.15	0.20	0.16

**Table 8** Distribution of the respondents according to their place with the longest duration

Sl. No.	Category	Respondents		
		Male (N=133)	Female (N=44)	Overall (N=177)
1.	Rural	96 (71.18)	29 (65.91)	125 (70.62)
2.	Urban	37 (27.82)	15 (34.09)	52 (29.38)
	Total	133 (100.00)	44 (100.00)	177 (100.00)
	Average	1.28	1.34	1.29

was 0.15 and 0.20, respectively. At the overall level, the average membership of the respondents in any environmental organization/society was 0.16.

A quick look at Table 8 shows that a little less than three-fourths (71.18 %) of the male respondents lived in rural areas, whereas more than one-fourths (27.82 %) of the respondents were living in urban areas. More than three-fifths (65.91%) of the female respondents had lived for the longest duration in rural areas, followed by 34.09 % of the respondents who had the longest duration in urban areas. At the overall level, 70.62 and 29.38 % of the respondents have the longest duration in rural and urban areas, respectively. The average longest duration of the male and female respondents was 1.28 and 1.34, respectively. At the overall level, the average area with the longest duration of the respondents was 1.28.

It can be seen from Table 9 that 66.15 % of the male faculty had not taught any course on environmental aspects, followed by 33.85 % of the male faculty who taught courses on environmental aspects. While 66.67 % of the female faculty had not taught any course on environmental aspects, 33.33 % of the female faculty taught courses on environmental aspects. At the overall level, 66.25 % of the faculty had not taught any course on environmental aspects, followed by 33.75 % of the faculty who had taught courses on environmental aspects. The average environmental courses taught by the male and female faculty were 0.48 and 0.48, respectively. At the overall level, the faculty's average number of courses taught on environmental aspects was 0.48.

A critical look at Table 10; Fig. 1 shows that a majority (96.24 %) of the male respondents were aware of the World Environment Day (June 05), followed by (92.48 %) World Earth Day (April 22), (90.98 %) World Soil Day (December 05), (92.48 %) World Forest Day (March 21), (92.78 %) World Water Day (March 22) and (81.20 %) International Day for Natural Disaster Reduction (October 13). In the case of the female respondents, cent % of the respondents was aware of World Environment Day (June 05) and World Earth Day (April 22), respectively, followed by World Soil Day (December 05) (95.45 %), World Forest Day (March 21) (88.64 %), World Water Day (March 22) (93.18 %), International Day for Natural Disaster Reduction (October 13) (81.82 %). At the overall level, a majority (97.18 %) of the respondents were aware of World Environment Day (June 05), followed by World Earth Day (April 22) (94.35 %), World Soil Day (December 05) (92.09 %), World Forest Day (March 21) (91.53 %), World Water Day (March 22) (92.66 %) and International Day For Natural Disaster Reduction (October 13) (81.36 %).

The data presented in Table 11 show that 45.12 % of the male respondents had medium awareness about environment-related days, followed by 42.10 and 12.78 % of the respondents with high and low awareness about environment-related days, respectively. However, more than half (56.83 %) of the female respondents had medium awareness about environment-related days, followed by 31.81 and 11.36 % of respondents who had high and low awareness about environment-related days, respectively. At the

**Table 9** Distribution of the respondents according to courses taught on environmental aspects (faculty)

Sl. No.	Category	Respondents		
		Male (N=65)	Female (N=15)	Overall (N=80)
1.	Taught	22 (33.85)	05 (33.33)	27 (33.75)
2.	Not taught	43 (66.15)	10 (66.67)	53 (66.25)
	Total	65 (100.00)	15 (100.00)	80 (100.00)
	Average	0.48	0.48	0.48

**Table 10** Distribution of the respondents according to their awareness about days related to the environment

Sl. No.	Category	Respondents																	
		Male (N= 133)						Female(N=44)						Overall (N=177)					
		Aware		Not aware		%		Aware		Not aware		%		Aware		Not aware		%	
F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%		
1	World Environment Day (5 June)	128	96.24	5	3.76	44	100	-	-	172	97.18	5	2.82						
2	World Earth Day (22 April)	123	92.48	10	7.52	44	100	-	-	167	94.35	10	5.65						
3	World Soil Day (December 05)	121	90.98	12	9.02	42	95.45	2	4.55	163	92.09	14	7.91						
4	World Forest Day (21 March)	123	92.48	10	7.52	39	88.64	5	11.36	162	91.53	15	8.47						
5	World Water Day (22 March)	123	92.48	10	7.52	41	93.18	3	6.82	164	92.66	13	7.34						
6	International Day for Natural Disaster Reduction (13 October)	108	81.20	25	18.80	36	81.82	8	18.18	144	81.36	33	18.64						

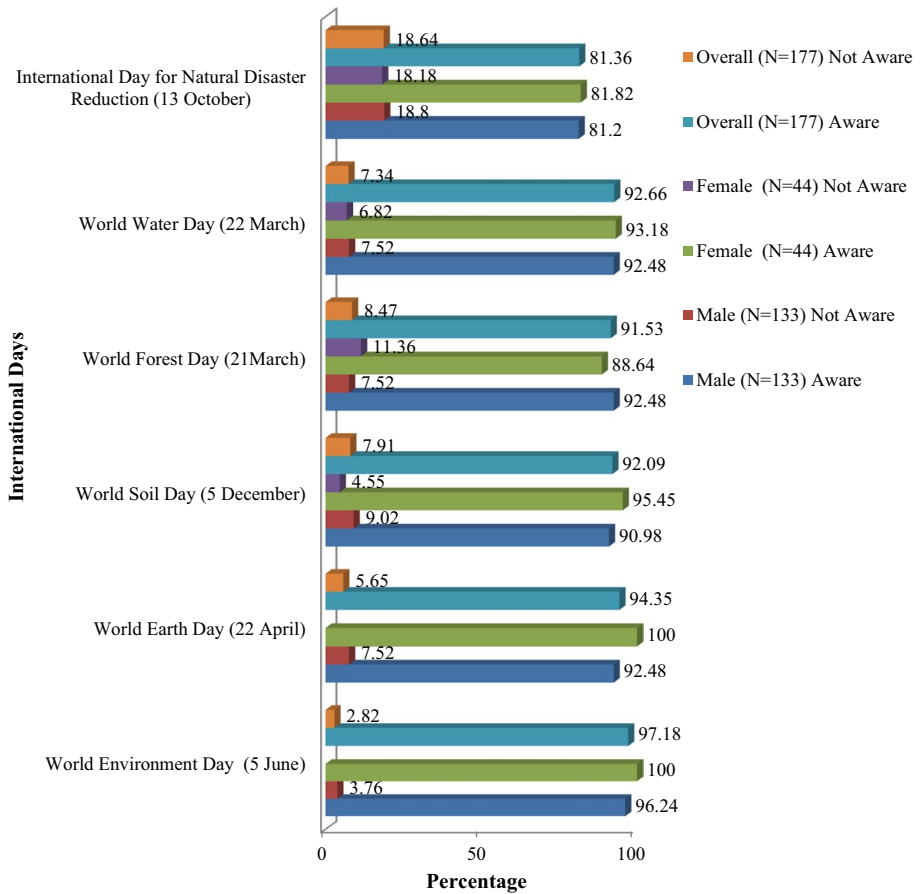


Fig. 1 Distribution of the respondents according to their awareness about environmental related days

Table 11 Overall awareness about days-related environment

Sl. No.	Category (Score)	Respondents		
		Male (N=133)	Female (N=44)	Overall (s=177)
1.	Low (up to 4.34)	17 (12.78)	05 (11.36)	22 (12.43)
2.	Medium (4.35 to 6.63)	60 (45.12)	25 (56.83)	80 (45.20)
3.	High (6.64 and above)	56 (42.10)	14 (31.81)	75 (42.37)
	Total	133 (100.00)	44 (100.00)	177 (100.00)
	Average	5.46	5.59	5.49

overall level, less than half (45.20 %) of the respondents had medium awareness of environment-related days, followed by 42.37 and 12.43 % of the respondents with high and low awareness of environmental-related days, respectively. The average awareness about

environment-related of the male and female respondents was 5.46 and 5.59, respectively. At the overall level, the average awareness of the respondents was 5.49.

It is evident from the data in Table 12; Fig. 2 that an overwhelming percentage (96.24 %) of the male respondents participated in tree plantation programmes, followed by cleanliness drives (85.71 %), environmental awareness programmes (84.21 %), village sanitation campaigns (82.71 %), lectures on environmental aspects (79.70 %), seminars on environmental aspects (62.41 %), workshops on environmental aspects (54.14 %) and trainings on environmental aspects (52.63 %). In contrast, a majority (95.45 %) of the female participants participated in tree plantation programmes, followed by cleanliness drives (88.64 %), environmental awareness programmes (84.09 %), village sanitation campaigns (79.55 %), lectures on environmental aspects (59.09 %), seminars on environmental aspects (54.55 %), trainings on environmental aspects (38.64 %), workshops on environmental aspects (31.82 %). At the overall level, 96.05 % of the respondents participated in Tree Plantation programmes, followed by cleanliness drives (86.44 %), environmental awareness programmes (84.18 %), village sanitation campaigns (81.92 %), lectures on environmental aspects (74.58 %), seminars on environmental aspects (60.45 %), trainings on environmental aspects (49.15 %), workshops on environmental aspects (48.59 %).

Table 13 reveals that more than half (52.63 %) of the male respondents were under the medium category of participation in environmental-related activities, followed by 36.09 and 11.28 % of the respondents who were under the high and low category of participation in environmental-related activities, respectively. However, more than three-fifths (65.91 %) of the female respondents had medium category of participation in environmental-related activities, followed by 20.45 % and 13.64 % of respondents who had high and low categories of participation in environmental-related activities, respectively. At the overall level, more than half (55.93 %) of the respondents had medium category of participation in environmental-related activities, followed by 32.20 and 11.86 % respondents who had the high and low category of participation in environmental-related activities, respectively. The average participation in environmental-related activities by the male and female respondents was 5.98 and 5.27, respectively. At the overall level, the average participation in environmental-related activities by the respondents was 5.80.

A critical look at Table 14; Fig. 3 indicates the kitchen waste management: a majority (79.70 %) of the male respondents were using garbage bins always, followed by use of municipality garbage bin (67.67 %), manure pit (66.17 %), use of one common garbage bin for all household waste (60.15 %). However, 22.92 % of the respondents sometimes used manure pits, followed by garbage bins (17.36 %). A considerable percentage of the respondents (65.28 %) had never thrown waste on the roadside, followed by the use of one common garbage bin for all household waste (26.39 %). An overwhelming percentage (90.91 %) of female respondents always used garbage bins for waste management. It was followed by use of municipality garbage bin (63.64 %), manure pit (50.00 %), use of one common garbage bin for all household waste (38.64 %), whereas 40.91 % of the respondents sometimes used manure pit followed by use of one common garbage bin for all household waste (22.73 %), municipality garbage (18.18 %), more than four-fifths (84.09 %) of the respondents never threw garbage on the roadside, followed by use of one common dust bin for all household waste (38.64 %). At the overall level, more than four-fifths (82.49 %) of the respondents used garbage bins for waste management, followed by use of municipality garbage (66.67 %), manure pit (62.15 %), use of one common garbage bin for all household waste (54.80 %), whereas 28.81 % of the respondents sometimes used manure pit followed by use of municipality garbage (18.08 %), and three-fourths (74.01 %) of the

**Table 12** Distribution of the respondents according to their participation in environmental-related activities

Sl. No.	Category	Respondents											
		Male (N=133)				Female(N44)				Overall (N=177)			
		Yes	No	F	%	Yes	No	F	%	Yes	No	F	%
1	Environmental awareness programmes	112	84.21	21	15.79	37	84.09	7	15.91	149	84.18	28	15.82
2	Cleanliness drives	114	85.71	19	14.29	39	88.64	5	11.36	153	86.44	24	13.56
3	Tree plantation programmes	128	96.24	5	3.76	42	95.45	2	4.55	170	96.05	7	3.95
4	Village sanitation campaign	110	82.71	23	17.29	35	79.55	9	20.45	145	81.92	32	18.08
5	Lecture on environmental aspect	106	79.70	27	20.30	26	59.09	18	40.91	132	74.58	45	25.42
6	Seminar on environmental aspect	83	62.41	50	37.59	24	54.55	20	45.45	107	60.45	70	39.55
7	Workshop on environmental aspect	72	54.14	61	45.86	14	31.82	30	68.18	86	48.59	91	51.41
8	Training on environmental aspect	70	52.63	63	47.37	17	38.64	27	61.36	87	49.15	90	50.85



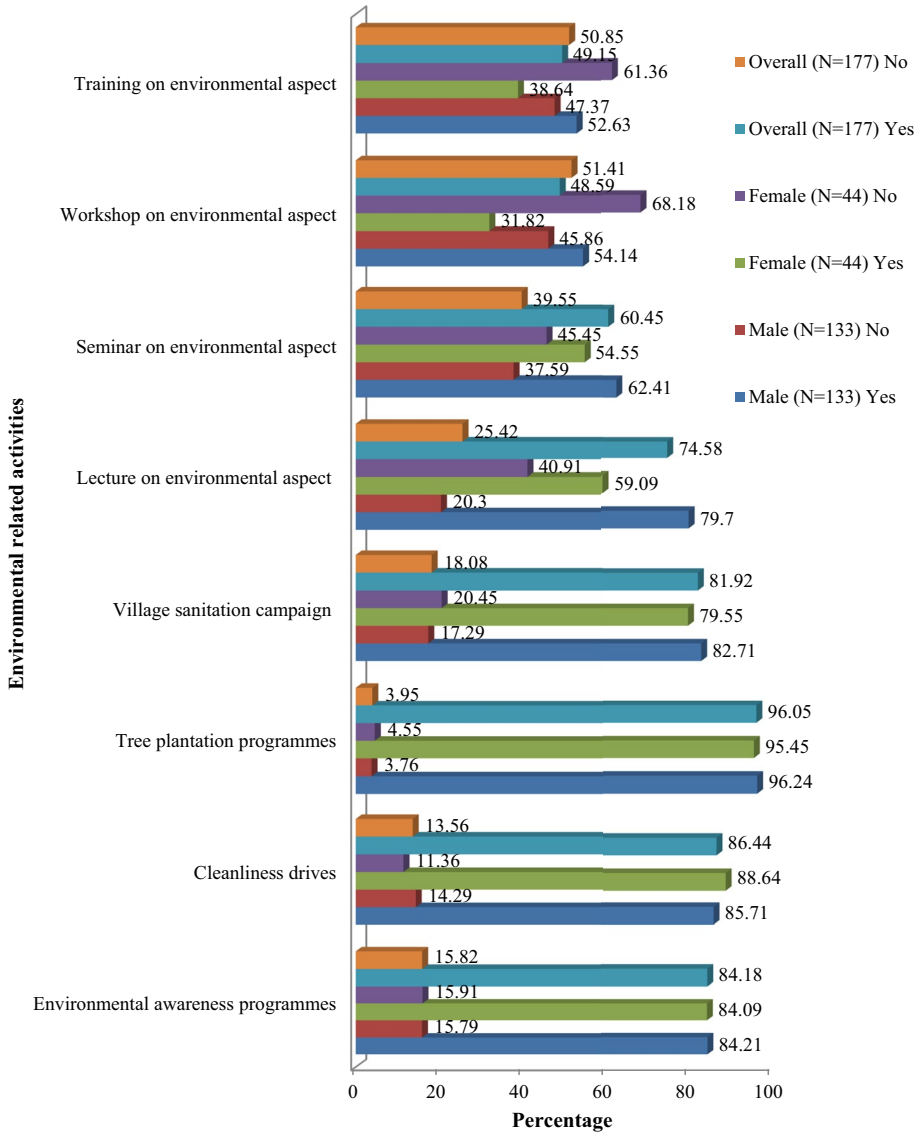


Fig. 2 Distribution of the respondents according to their participation in environmental-related activities

respondents never threw garbage on the roadside followed by use of one common garbage bin for all household waste (31.07 %).

As regards waste plastic material, more than half (68.06 %) of the male respondents always used dust bins, followed by respondents who separately collected and sold it (47.22 %), whereas 39.58 % of the respondents had sometimes reused, and 21.53 % of the respondents never collected separately and sold it. More than half, 68.18 % of the female respondents always used garbage bins for plastic waste, followed by respondents who separately collected and sold it (59.09 %). More than half (54.55 %) of the

**Table 13** Overall participation in environmental-related activities

Sl. No.	Category (Score)	Respondents		
		Male (N=133)	Female (N=44)	Overall (N=177)
1.	Low (up to 3.81)	15 (11.28)	06 (13.64)	21 (11.86)
2.	Medium (3.82 to 7.78)	70 (52.63)	29 (65.91)	99 (55.93)
3.	High (7.79 and above)	48 (36.09)	09 (20.45)	57 (32.20)
	Total	133 (100.00)	44 (100.00)	177(100.00)
	Average	5.98	5.27	5.80

respondents sometimes reused, and an equal number (15.91 %) of the respondents never threw it in the garbage bin and respondents who collected separately and sold it, respectively. At the overall level, 72.32 % of the respondents have always used garbage bins, followed by separate respondents who collected and sold it (53.11 %), less than half (45.76 %) of the respondents had sometimes reused and 21.47 % of the respondents never separately collected and sold it.

In the case of glass waste material, more than half (59.03 %) of the male respondents always collected and threw it separately, followed by throwing it in the dust bin (50.69 %). In contrast, an equal number (31.94 %) of the respondents were sometimes separately collected and sold or reused, and 31.25 % of the respondents never reused glass waste material. More than half (68.18 %) of the female respondents always collected and threw it separately. 50.00 % of the respondents sometimes reused it, and 34.09 % of the respondents never threw it in the dust bin. At the overall level, 64.97 % of the respondents always collected and threw it separately, followed by respondents who threw it in the dust bin (53.67 %), whereas 38.42 % of the respondents sometimes reused it, and 32.20 % of the respondents never threw it in the dust bin.

With regard to empty tins of pesticides/insecticides management, less than three-fourths (73.61 %) of the male respondents always disposed it off separately, followed by (38.89 %) of respondents who collected and threw it in the common garbage bin; 19.44 % sometimes collected and threw it in the common garbage bin, and 43.75 % never threw it in the common garbage bin, whereas four-fifths of the female respondents always disposed of it separately followed by 15.91 % sometimes collected and threw it outside in the common garbage bin. More than three-fifths (61.36 %) of the respondents never threw it in the common garbage bin. At the overall level, 81.92 % of the respondents always disposed of it separately, followed by 19.77 % of the respondents who sometimes collected and threw it outside in the common garbage bin. 50.85 % of the respondents never threw it in the common garbage bin.

As far as management of carry bags of polythene is concerned, 52.08 % of the male respondents always threw them in the common dust bin, followed by 26.39 % of the respondents who sometimes collected and reused them. 46.53 % of the respondents never burnt polythene carry bags. Similarly, 68.18 % of the female respondents collected and reused the polythene carry bags, followed by 52.27 % of the respondents who sometimes burnt them. 47.73 % of the respondents never threw them in the common dust bin. At the overall level, 55.93 % of the respondents collected the carry bags for reuse, followed by 29.38 % of the respondents who sometimes burnt the polythene carry bags, and 35.59 % of the respondents never threw the carry bags of polythene in the common dust bin.

**Table 14** Distribution of the respondents according to their waste management

Sl. No.	Category	Respondents																		
		Male (N=133)						Female (N=44)						Overall (N=177)						
		Always		Sometime		Never		Always		Sometime		Never		Always		Sometime		Never		
F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	
<b>A. Kitchen Waste</b>																				
1	Garbage bins	106	79.70	25	17.36	2	1.39	40	90.91	4	9.09	-	146	82.49	29	16.38	2	1.13		
2	Thrown in manure pit	88	66.17	33	22.92	12	8.33	22	50.00	18	40.91	4	9.09	110	62.15	51	28.81	16	9.04	
3	Thrown in road side	24	18.05	15	10.42	94	65.28	-	-	7	15.91	37	84.09	24	13.56	22	12.43	131	74.01	
4	Thrown in municipality garbage	90	67.67	24	16.67	19	13.19	28	63.64	8	18.18	8	18.18	118	66.67	32	18.08	27	15.25	
5	Use of one common dust bin for all household waste	80	60.15	15	10.42	38	26.39	17	38.64	10	22.73	17	38.64	97	54.80	25	14.12	55	31.07	
<b>B. Waste material of plastic</b>																				
6	Thrown in the dust bin	98	68.06	22	15.28	13	9.03	30	68.18	7	15.91	7	15.91	128	72.32	29	16.38	20	11.30	
7	Collected separately and sell	68	47.22	34	23.61	31	21.53	26	59.09	11	25.00	7	15.91	94	53.11	45	25.42	38	21.47	
8	Reuse it	49	34.03	57	39.58	27	18.75	14	31.82	24	54.55	6	13.64	63	35.59	81	45.76	33	18.64	
<b>C. Waste material of glass</b>																				
9	Thrown in the dust bin	73	50.69	18	12.50	42	29.17	22	50.00	7	15.91	15	34.09	95	53.67	25	14.12	57	32.20	
10	Collected separately and sell	58	40.28	46	31.94	29	20.14	25	56.82	9	20.45	10	22.73	83	46.89	55	31.07	39	22.03	
11	Collected and thrown separately	85	59.03	24	16.67	24	16.67	30	68.18	8	18.18	6	13.64	115	64.97	32	18.08	30	16.95	
12	Reuse it	42	29.17	46	31.94	45	31.25	12	27.27	22	50.00	10	22.73	54	30.51	68	38.42	55	31.07	
<b>D. Empty tins of pesticides/insecticides</b>																				
13	Thrown in the common dust bin	47	32.64	23	15.97	63	43.75	13	29.55	4	9.09	27	61.36	60	33.90	27	15.25	90	50.85	
14	Collected and thrown outside in common dust bin	56	38.89	28	19.44	49	34.03	17	38.64	7	15.91	20	45.45	73	41.24	35	19.77	69	38.98	
15	Dispose off separately	106	73.61	7	4.86	20	13.89	39	88.64	4	9.09	1	2.27	145	81.92	11	6.21	21	11.86	
<b>E. Carry bags of polythene</b>																				

**Table 14** (continued)

Sl. No.	Category	Respondents																	
		Male (N=133)			Female (N=44)			Overall (N=177)											
		Always	Sometime	Never	Always	Sometime	Never	Always	Sometime	Never	F %	F %	F %						
		F %	F %	F %	F %	F %	F %	F %	F %	F %	F %	F %	F %						
16	Thrown in the common dust bin	75	52.08	16	11.11	42	29.17	16	36.36	7	15.91	21	47.73	91	51.41	23	12.99	63	35.59
17	Collect for reuse	69	47.92	38	26.39	26	18.06	30	68.18	9	20.45	5	11.36	99	55.93	47	26.55	31	17.51
18	Burn it	37	25.69	29	20.14	67	46.53	10	22.73	23	52.27	11	25.00	47	26.55	52	29.38	78	44.07

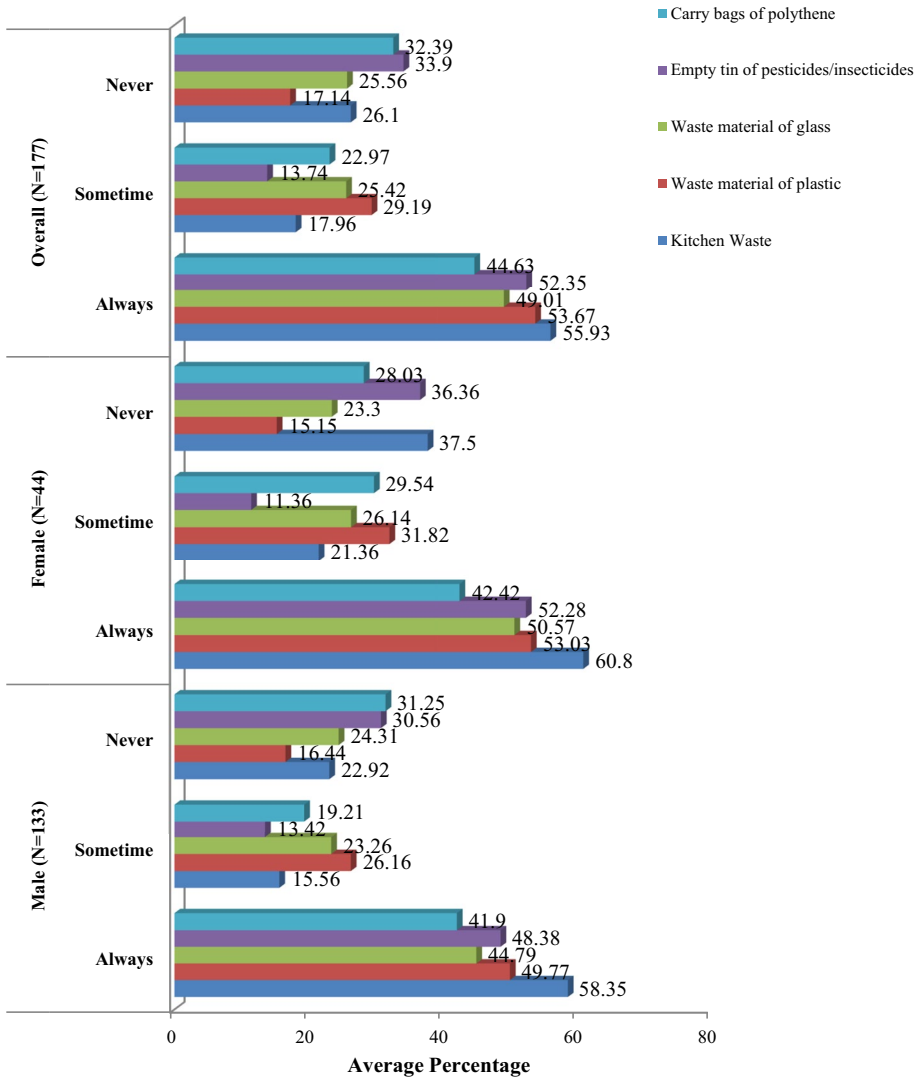


Fig. 3 Distribution of the respondents according to their component-wise management of wastes

Table 15 Overall waste management

Sl. No.	Category (Score)	Respondents		
		Male (N=133)	Female (N=44)	Overall (N=177)
1.	Low (up to 15.35)	16 (12.03)	06 (13.64)	22 (13.43)
2.	Medium (15.36 to 29.57)	89 (66.92)	30 (68.18)	119 (67.23)
3.	High (29.58 and above)	28 (21.05)	08 (18.18)	36 (20.34)
	Total	133 (100.00)	44 (100.00)	177 (100.00)
	Average	22.67	21.89	22.47

Table 15 shows that more than three-fifths (66.92 %) of the male respondents were of the medium category of the overall management of wastes, followed by 21.05 and 12.03 % of the respondents who were of the high and low category of overall waste management, respectively. Similarly, 68.18% of the female respondents were of the medium category of overall waste management, followed by 18.18 % and 13.64 % respondents who were of high and low category of overall waste management, respectively. Both males and females combined, more than three-fifths (67.23 %) of the respondents, were of the medium category of the overall waste management, followed by 20.34 and 13.43 % respondents who were of the high low category. The average management of wastes by male and female respondents was 22.67 and 21.89 %, respectively. At the overall level, the average waste management of the respondents was 22.47 %

Table 16; Fig. 4 show that more than three-fourths (76.69 %) of the male respondents always received environmental-related information through WhatsApp, followed by Television (74.43 %); YouTube (67.67 %); Websites (65.41 %) and 44.36 % of the respondents sometimes received information through Radio, while 18.80 % of the respondents never received information from Radio. Similarly, four-fifths (84.09 %) of the female respondents always got environmental-related information through WhatsApp, followed by Websites (70.45 %), Television (68.18 %), YouTube (61.36 %), and 56.82 % of the respondents sometimes received information through Radio. An equal number (15.91 %) of the respondents never got information through Radio and Facebook, respectively. At the overall level, 78.53 % of the respondents always received environmental-related information through WhatsApp, Television (70.62 %), Websites (66.67 %), YouTube (66.10 %), Facebook (61.02 %), whereas 47.46 % of the respondents sometimes received information through Radio and 18.08 % of the respondents never received information through Radio.

It is apparent from Table 17 that more than half (57.14 %) of the male respondents fall under the medium category of overall use of social media, followed by 27.07 and 15.79 % of the respondents who were of high and low category of overall use of the social media, respectively. Similarly, 70.45 % of the female respondents were of the medium category of overall use of social media, followed by 20.45 and 09.09 % of respondents of high and low category of overall use of social media, respectively. At the overall level, more than three-fifths (60.45%) of the respondents were of the medium category of overall use of social media, followed by 25.42 and 14.12 % of respondents who were of high and low category of overall use of social media. The average use of social media of the male and female respondents was 9.33 and 9.30 %, respectively. At the overall level, the combined average of the social media usage by both the respondents was 9.32 %. These findings are similar to the results of (Ammar et al. 2020).

From the data presented in Table 18, it can be seen that an overwhelming (93.98 %) of the male respondents had knowledge about the Wild Life Act, 1972 followed by the Environmental Protection Act, 1986 (92.48 %), the Forest Act, 1980 (90.23 %), the Water (Prevention & Control of Pollution) Act 1974 (87.22 %), the Air (Prevention & Control of Pollution) Act 1981 (86.47 %), the Biodiversity Act, 2002 (84.21 %), the Motor Vehicle Act, 1988 (81.20 %). Similarly, 93.18 % of the female respondents knew the Environmental Protection Act, 1986, followed by the Water (Prevention & Control of Pollution) Act 1974 (90.91 %), the Air (Prevention & Control of Pollution) Act, 1981 (88.64 %), the Biodiversity Act, 2002 (86.36 %). At the overall level, 92.66 % of the respondents knew the Environmental Protection Act, 1986 followed by the Wild Life Act, 1972 (92.09 %), the water (Prevention & Control of Pollution) Act, 1974 (88.14 %), the Air (Prevention & Control of Pollution) Act, 1981 (87.01 %), and the Biodiversity Act, 2002 (84.75 %).

**Table 16** Distribution of the respondents according to their use of different social media

Sl. No.	Source	Respondents						Overall (N=177)											
		Male (N=133)			Female (N=44)			Always			Sometime			Never					
		F	%	%	F	%	%	F	%	%	F	%	%	F	%	%			
1	Television	95	71.43	32	24.06	6	4.51	30	68.18	11	25	3	6.82	125	70.62	43	24.29	9	5.08
2	Radio	49	36.84	59	44.36	25	18.80	12	27.27	25	56.82	7	15.91	61	34.46	84	47.46	32	18.08
3	Facebook	82	61.65	41	30.83	10	7.52	26	59.09	11	25.00	7	15.91	108	61.02	52	29.38	17	9.60
4	WhatsApp	102	76.69	26	19.55	5	3.76	37	84.09	7	15.91	-	0.00	139	78.53	33	18.64	5	2.82
5	YouTube	90	67.67	37	27.82	6	4.51	27	61.36	16	36.36	1	2.27	117	66.10	53	29.94	7	3.95
6	Websites	87	65.41	36	27.07	10	7.52	31	70.45	12	27.27	1	2.27	118	66.67	48	27.12	11	6.21

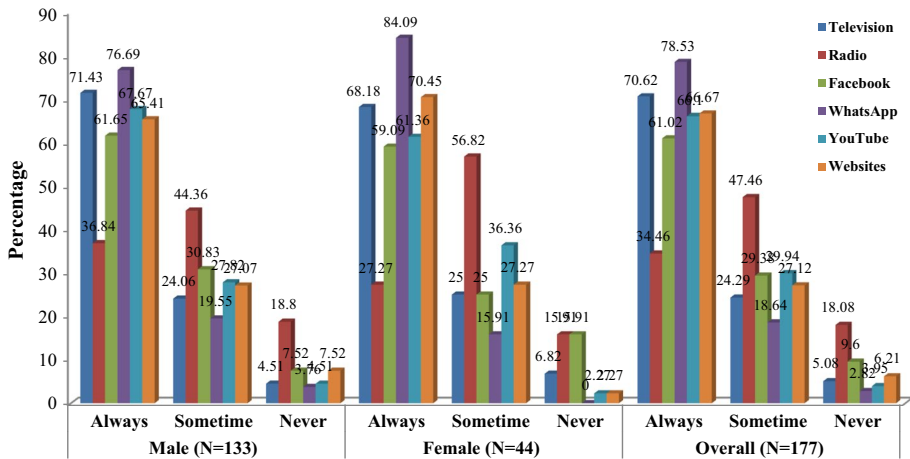


Fig. 4 Distribution of the respondents according to their use of different social media

Table 17 Overall use of social media

Sl. No.	Category (Score)	Respondents		
		Male (N=133)	Female (N=44)	Overall (N=177)
1.	Low (up to 6.91 )	21 (15.79)	04 (09.09)	25 (14.12)
2.	Medium ( 6.92 to 11.72 )	76 (57.14)	31 (70.45)	107 (60.45)
3.	High ( 11.73 and above)	36 (27.07)	09 (20.45)	45 (25.42)
	Total	133 (100.00)	44 (100.00)	177 (100.00)
	Average	9.33	9.30	9.32

The data in Table 19 indicated that more than three-fourths (77.44 %) of the male respondents had high knowledge about the Acts related to environmental protection, followed by 18.80 and 3.76 % of the respondents who had medium less knowledge about the Acts pertaining to environmental protection, respectively. Similarly, 75.00% of the female respondents had high knowledge about the Acts related to environmental protection, followed by 22.73 and 2.44 % respondents who had medium and less knowledge about the Acts pertaining to environmental protection, respectively. At the overall level, more than half (52.54 %) of the respondents had high knowledge about the Acts related to environmental protection, followed by 33.90 and 13.56 % respondents who had medium and less knowledge about the Acts pertaining to environmental protection, respectively. The average knowledge about the Acts related to environmental protection of the male and female respondents was 9.33 and 9.30, respectively. At the overall level, the average use of social media of the respondents was 9.32.

A critical look into Table 20 showed (79.70 %) of the male respondents equal, high and strong agreement with the statement ‘I feel green zone surrounding to the home which improve air quality’ and ‘Excess use chemical pesticides cause hazardous effects to the



**Table 18** Distribution of the respondents according to their knowledge of Environmental Protection Acts

Sl. No.	Category	Respondents																	
		Male (N=133)						Female (N=44)						Overall (N=177)					
		Yes		No		%		Yes		No		%		Yes		No		%	
F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%		
1.	The Wild Life Act, 1972	125	93.98	8	6.02	38	86.36	6	13.64	163	92.09	14	7.91						
2.	The Forest Act, 1980	120	90.23	13	9.77	36	81.82	8	18.18	156	88.14	21	11.86						
3.	The Motor Vehicle Act, 1988	108	81.20	25	18.80	32	72.73	12	27.27	140	79.10	37	20.90						
4.	The Environmental Protection Act, 1986	123	92.48	10	7.52	41	93.18	3	6.82	164	92.66	13	7.34						
5.	The Biodiversity Act, 2002	112	84.21	21	15.79	38	86.36	6	13.64	150	84.75	27	15.25						
6.	The Air (Prevention & Control of Pollution) Act, 1981	115	86.47	18	13.53	39	88.64	5	11.36	154	87.01	23	12.99						
7.	The water (Prevention & Control of Pollution) Act, 1974	116	87.22	17	12.78	40	90.91	4	9.09	156	88.14	21	11.86						

**Table 19** Overall knowledge about Acts related to environmental protection

Sl. No.	Category (Score)	Respondents		
		Male (N=133)	Female (N=44)	Overall (N=177)
1.	Less (up to 4.49 )	05 (3.76)	01 (2.44)	24 (13.56)
2.	Medium ( 4.50 to 7.72 )	25 (18.80)	10 (22.73)	60 (33.90)
3.	High ( 7.73 and above)	103 (77.44)	33 (75.00)	93 (52.54)
	Total	133 (100.00)	44 (100.00)	177 (100.00)
	Average	9.33	9.30	9.32

*environment*' followed by '*green manuring is an effective source to promote eco-friendly environment for agricultural development*' (78.55 %); '*I think community efforts will be helpful for the environmental protection*' (78.20 %); '*I believe that organic fertilizers are helpful for sustaining environmental balance*' (77.44 %); '*I feel use of solar based equipment to minimize pollution*' (75.19 %); '*I feel organic food to minimize risk of environmental damage*' (74.44 %); '*I think recyclable things are minimize environment damages*' (71.43 %); and '*I feel biodegradable goods are useful to the environment*' (70.68 %), whereas an equal number (36.09 %) of the male respondents agreed to the statement that '*legal measures are better option to protect environmental damages*' and '*I avoid long ride of motorcycle to minimize air pollution*', respectively, followed by '*I am worried wherever read about of worldwide environmental tragedies*' (33.83 %); '*I think washing of clothes, animal and machinery in natural water bodies cause harmful effects to the environment*' (27.82 %); the respondents undecided with the statement '*I think it is not my responsibility to protect environment*' (15.79); the respondents who disagreed with '*I think it is meaningless to buy paper bags instead of nylon bags given for free in the market*' (7.52 %); less than half (49.62 %) of the respondents Strongly Disagreed with the statement'. Similarly, by comparison, more than four-fifths (88.64 %) of the female respondents had high agreement with the statement '*green manuring is an effective source to promote an eco-friendly environment for agricultural development*' followed by '*I feel use of solar-based equipment to minimize pollution*' (79.55 %); '*I think community efforts will be helpful for the environmental protection*' and '*I feel organic food to minimize the risk of environmental damage*' (77.27 %); '*I feel biodegradable goods are useful to the environment*' and '*I feel green zone surrounding to the home which improves air quality*' (75.00 %). More than half (52.27 %) of the respondents agreed with '*legal measures are a better option to protect environmental damages*' and (11.76 %) of the respondents remained undecided about the statement '*I think it is not my responsibility to protect the environment*', while (2.27 %) of the respondents strongly disagreed with all the seventeen statements. In this context, when referred to Table 21, at the overall level, (81.36 %) of the respondents agreed with statements like '*Green manuring is an effective source to promote an eco-friendly environment for agricultural development*' followed by '*I feel green zone surrounding to the home which improves air quality*' (78.53 %); '*I think community efforts will be helpful for the environmental protection*' (77.09 %); '*I feel use of solar-based equipment to minimize pollution*' (76.27 %); '*I feel organic food to minimize the risk of environmental damage*' (75.14 %). Similarly, 40.11 % of the respondents agreed with the statement '*legal measures are a better option to protect environmental damages*' while 14.69 % of the respondents were undecided about the statement '*I think it is not my responsibility to protect the environment*'. 5.08 % of the

**Table 20** Distribution of the respondents according to gender attitude towards environmental protection

Sl. No.	Statements	Respondents											
		Male (N=133)						Female (N=44)					
		SA	A	U	DA	SAD	SA	A	U	DA	SAD		
1.	I think it is not my responsibility to protect environment	28 (21.05)	10 (7.52)	21 (15.79)	8 (6.02)	66 (49.62)	9 (20.45)	2 (4.55)	5 (11.36)	-	28 (63.64)		
2.	I avoid long ride of motorcycle to minimize air pollution	66 (49.62)	48 (36.09)	10 (7.52)	8 (6.02)	1 (0.75)	25 (56.82)	13 (29.55)	1 (2.27)	4 (9.09)			
3.	I feel the use of solar-based equipment to minimize pollution	100 (75.19)	29 (21.80)	-	2 (1.50)	2 (1.50)	35 (79.55)	6 (13.64)	1 (2.27)	1 (2.27)			
4.	I am worried wherever read about of worldwide environmental tragedies	82 (61.65)	45 (33.83)	3 (2.26)	2 (1.50)	1 (0.75)	29 (65.91)	13 (29.55)	-	2 (4.55)			
5.	I think community efforts will be helpful for the environmental protection	104 (78.20)	26 (19.55)	-	2 (1.50)	1 (0.75)	34 (77.27)	6 (13.64)	1 (2.27)	2 (4.55)			
6.	I think use of plastic bags for food packaging cause destructive effects to the environment	84 (63.16)	38 (27.57)	2 (1.50)	5 (3.76)	4 (3.01)	32 (72.73)	7 (15.91)	1 (2.27)	2 (4.55)			
7.	I feel organic food to minimize risk of environmental damage	99 (74.44)	29 (21.80)	2 (1.50)	1 (0.75)	2 (1.50)	34 (77.27)	8 (18.18)	-	1 (2.27)			
8.	Legal measures are better option to protect environmental damages	77 (57.89)	48 (36.09)	2 (1.50)	3 (2.26)	3 (2.26)	19 (43.18)	23 (52.27)	1 (2.27)	-			
9.	I think washing of cloths, animal, machinery in natural water bodies cause harmful effects to the environment	84 (63.16)	37 (27.82)	6 (4.51)	4 (3.01)	2 (1.50)	27 (61.36)	15 (34.09)	-	1 (2.27)			
10.	I feel the green zone surrounding the home improve air quality	106 (79.70)	21 (16.54)	3 (1.50)	2 (1.50)	1 (0.75)	33 (75.00)	9 (20.45)	-	1 (2.27)			
11.	Excess use chemical pesticides cause hazardous effects to the environment	106 (79.70)	21 (15.79)	3 (2.26)	2 (1.50)	1 (0.75)	33 (75.00)	8 (18.18)	-	2 (4.55)			
12.	I believe that organic fertilizers help sustain environmental balance	103 (77.44)	25 (18.80)	2 (1.50)	2 (1.50)	1 (0.75)	34 (77.27)	7 (15.91)	-	2 (4.55)			
13.	Green manuring is an effective source to promote an eco-friendly environment for agricultural development	105 (78.95)	25 (18.80)	-	2 (1.50)	1 (0.75)	39 (88.64)	2 (4.55)	1 (2.27)	1 (2.27)			

Table 20 (continued)

Sl. No.	Statements	Respondents											
		Male (N=133)						Female (N=44)					
		SA	A	U	DA	SAD	SA	A	U	DA	SAD		
14.	I think use of dust bins for wastage food management avoid environmental pollution	85 (63.91)	42 (31.58)	2 (1.50)	3 (2.06)	1 (0.75)	27 (61.36)	12 (27.27)	3 (6.82)	1 (2.27)	1 (2.27)		
15.	I feel biodegradable goods are useful to the environment	94 (70.68)	35 (26.32)	1 (0.75)	2 (1.50)	1 (0.75)	33 (75.00)	8 (18.18)	2 (4.55)	1 (2.27)	–		
16.	I think recyclable things are minimize environment damages	95 (71.43)	34 (25.56)	2 (1.50)	1 (0.75)	1 (0.75)	32 (72.73)	10 (22.73)	–	1 (2.27)	1 (2.27)		
17.	I think it is meaningless to buy paper bags instead of nylon bags given for free in the market	58 (43.61)	23 (17.29)	13 (9.78)	10 (7.52)	29 (21.28)	19 (43.18)	5 (11.36)	9 (20.45)	3 (6.82)	8 (18.18)		

SA-Strongly Agree, A-Agree, U-Undecided, DA-Disagree, SDA-Strongly Disagree

**Table 21** Overall gender attitude towards environmental protection

Sl. No.	Statements	Respondents (N=133)					
		SA	A	U	DA	SAD	
1.	I think it is not my responsibility to protect the environment	37 (20.90)	12 (6.78)	26 (14.69)	8 (4.52)	94 (53.11)	
2.	I avoid long rides on the motorcycle to minimize air pollution	91 (51.41)	61 (34.46)	11 (6.21)	9 (5.08)	5 (2.82)	
3.	I feel use of solar based equipment to minimize pollution	135 (76.27)	35 (19.77)	1 (0.56)	3 (1.69)	3 (1.69)	
4.	I am worried wherever read about worldwide environmental tragedies	111 (62.71)	58 (32.77)	3 (1.69)	4 (2.26)	1 (0.56)	
5.	I think community efforts will be helpful for the environmental protection	138 (77.91)	32 (18.08)	1 (0.56)	3 (1.69)	3 (1.69)	
6.	I think the use of plastic bags for food packaging cause destructive effects on the environment	116 (65.54)	45 (25.42)	3 (1.69)	7 (3.95)	6 (3.39)	
7.	I feel organic food minimizes the risk of environmental damage	133 (75.14)	37 (20.90)	2 (1.13)	2 (1.13)	3 (1.69)	
8.	Legal measures are better option to protect environmental damages	96 (54.24)	71 (40.11)	3 (1.69)	4 (2.26)	3 (1.69)	
9.	I think washing of cloths, animal, machinery in natural water bodies cause harmful effects to the environment	111 (62.71)	52 (29.38)	6 (3.39)	5 (2.82)	3 (1.69)	
10.	I feel the green zone surrounding the home improves air quality	139 (78.53)	31 (17.51)	2 (1.13)	3 (1.69)	2 (1.13)	
11.	Excess use of chemical pesticides cause hazardous effects to the environment	139 (78.53)	29 (16.38)	3 (1.69)	3 (1.69)	3 (1.69)	
12.	I believe that organic fertilizers help sustain environmental balance	137 (77.40)	32 (18.08)	2 (1.13)	3 (1.69)	3 (1.69)	
13.	Green manuring is an effective source to promote an eco-friendly environment for agricultural development	144 (81.36)	27 (15.25)	1 (0.56)	3 (1.69)	2 (1.13)	
14.	I think the use of dust bins for wastage food management avoid environmental pollution	112 (63.28)	54 (30.51)	5 (2.82)	4 (2.26)	2 (1.13)	

**Table 21** (continued)

Sl. No.	Statements	Respondents (N=133)				
		SA	A	U	DA	SAD
15.	I feel biodegradable goods are useful to the environment	127 (71.75)	43 (24.29)	3 (1.69)	3 (1.69)	1 (0.56)
16.	I think recyclable things minimize the environmental damages	127 (71.75)	44 (24.86)	2 (1.13)	2 (1.13)	2 (1.13)
17.	I think it is meaningless to buy paper bags instead of nylon bags given for free in the market	77 (43.50)	28 (18.82)	22 (12.43)	13 (7.34)	37 (20.90)

SA-Strongly Agree, A-Agree, U-Uncertain, DA-Disagree, SDA-Strongly Disagree

**Table 22** Overall gender attitude towards environmental protection

Sl. No.	Category	Male (N=133)	Female (N=44)	Overall (N=177)
1	Very low	6 (4.51)	4 (9.09)	10 (5.65)
2	Low	16(12.03)	3 (6.82)	19 (10.73)
3	Medium	70(52.63)	23 (52.27)	93 (52.54)
4	High	27(20.30)	10(22.73)	37 (20.90)
5	Very high	14 (10.53)	4 (9.09)	18 (10.17)
	Total	133 (100.00)	44 (100.00)	177 (100.00)
	Average	75.02	73.93	74.75

respondents disagreed with '*I avoid long ride of the motorcycle to minimize air pollution*'. More than half (53.11 %) of the respondents strongly disagreed with the statement '*I think it is not my responsibility to protect the environment*'.

The results presented in Table 22 showed that more than half (52.63 %) of the male respondents had a medium attitude towards environmental protection, while one-fifths (20.30 %) of the respondents had a high attitude towards environmental protection. Further, 12.03 % of the respondents had a low attitude towards environmental protection. Besides, 10.53 % of the respondents had a high attitude, and 4.51 % of the respondents had very low attitude towards environmental protection. In comparison, 52.27 % of the female respondents had a medium attitude towards environmental protection, while 22.73 % of the respondents had a high attitude. An equal number of the respondents (9.09 %) belonged to the very low and very high attitude categories towards environmental protection, respectively. The percentage under the category of low attitude towards environmental protection was 6.82. At the overall level, more than half (52.54 %) of the respondents belonged to the medium attitude towards environmental protection category, followed by 20.90 % of the respondents who had high, and 10.73 % of the respondents who had a low attitude towards environment protection. Apart from these, 10.17 % and 5.65 % of the female respondents had a very high and a very low attitude towards environmental protection categories, respectively. The average male and female respondents' attitudes towards environmental protection were 75.02 and 73.93 %, respectively. At the overall level, the average attitude towards environmental protection of the respondents was 74.75 %.

Table 23 shows the correlation coefficient between male attitude and the dependent variables. The conclusion was that the membership of environmental organizations/societies and management of wastes were significant at 0.01 levels with correlation coefficient values of (r) 0.2358 and 0.2263, respectively. In contrast, education, training received, courses taught and use of social media were significant at 0.05 level with correlation coefficient values of (r) 0.1621, 0.1368, -0.1348 and 0.1422, respectively. The remaining variables like profession, service experience, the place with the longest duration, awareness about environmental days, participation in environmental-related activities and knowledge about the Environment Acts were found to have no relationship with the male attitude. Regarding female attitude, the correlation between dependent variable found that variables like membership of environmental organizations/societies ( $r=0.3481$ ) and waste management ( $r=0.3942$ ) were significant at 0.01 level, whereas training received ( $r=-0.2518$ ), courses taught ( $r=0.2963$ ), use of the social media ( $r=-0.2794$ ) were significant at 0.05 level. The remaining variables had a non-significant correlation with the female attitude. At the overall level, age ( $r=0.2855$ ), participation in environmental-related activities ( $r=0.2571$ ), management of wastes ( $r=0.1982$ ) were significant at 0.01 level with gender attitude and

**Table 23** Correlation coefficient

Sl. No.	Variables	'r' value		
		Male (N=133)	Female (N=44)	Overall (N=177)
1.	Profession	-0.0915 NS	-0.0081NS	-0.0600 NS
2.	Education	0.1621*	-0.1167 NS	0.0784NS
3.	Service experience	0.0009 NS	0.0837 NS	0.0244 NS
4.	Age	0.0184	0.0281 NS	0.2852**
5.	Training received	0.1368*	-0.2518*	-0.0002 NS
6.	Membership of Environmental Organization/Societies	0.2358**	0.3481**	0.1350*
7.	Place with longest duration	0.0788 NS	-0.1810 NS	-0.0480 NS
8.	Course taught	-0.1348*	0.2963*	-0.1457*
9.	Awareness about environmental days	0.0289 NS	-0.0511 NS	0.0071 NS
10.	Participation in environmental-related activities	0.0545 NS	0.0419 NS	0.2571**
11.	Waste management	0.2263**	0.3942**	0.1982**
12.	Use of social media	0.1422*	-0.2794*	-0.1572*
13.	Knowledge about environment acts	0.0353 NS	-0.0690 NS	0.0284 NS

\* = Significance at 0.05 level \*\* = Significance at 0.01 level

membership in environmental organization/societies ( $r=0.1350$ ) and use of the social media ( $r= -0.1572$ ) were significant at 0.05 level. The remaining variables like profession, education, service experience, training received, the place with the longest duration, awareness about environmental days and knowledge about the Environment Acts were non-significant with the gender attitude.

## 4 Discussion

The primary aim of this study was to identify and understand the trainees' personal, psychological, communicational and sociocultural characteristics on 11 independent variables. The age of the trainees is the physical and mental development of an individual. Generally, the young trainees are more active, highly motivating, enthusiastic and mostly accept changes. The middle-aged trainees are reluctant to accept new ideas. The old-aged trainees resist changes and are slow to accept modernization. Such a hypothesis in this research implied that a majority of both male and female respondents belonged to the middle-age group (Lee et al., 2013). This meant that both males and females had well-equipped knowledge about environmental protection due to awareness programmes organized at the college. Formal, informal and non-formal education play an important role in the capacity development of individuals and is one of the most effective tools to produce desirable changes in the behaviour of humans in order to achieve environmental protection (Emilio Abad-Segura et al. 2019). Most of the male respondents were post-graduates. They had knowledge, abilities, skills, character and mental powers. They had ethical values and could discern the right and wrong about the environment. (P. Ataei et al.2018). Brain and cognitive development can increase knowledge in early childhood education (Nuthbrown,



2006; Spodek, 1993; Wolfe & Brandt, 1998). Experience helps develop maturity and the ability to face varied situations that ultimately improve individual and organizational growth. Both males and females had service from low to medium categories. Most of the respondents belong to the students' category. This is a promising finding from this study to enhance knowledge of these by encouraging more of middle-aged and young respondents in environmental protection at an early age, early years period which are the most significant developments occurred in a person's life and they are sensitive to adopt positive environmental attitudes (Mustard, 2000; Nuthbrown, 2006; Kağıtçıbaşı et al. 2001; Spodek, 1993; Wilson, 1996). The males received more training about environmental protection than the females, which was organized by different organizational and professional societies. Training programmes can reduce the gap between the actual performance and what is needed and improve knowledge, skill, attitude, values, beliefs and understanding (Bandura, 1977). The females are less aware of various training organization sources than the males (Badkobi and Hadipour 2001). The school was the most important source of environmental information for females, while males chose the internet (Kaur and Dang, 2015; Sahin and Erkal, 2010). The females were fewer subscribers of membership of environmental organizations/societies than the males. Several organizations/societies have specific aims and objectives for environmental conservation. They organize several awareness programmes for the readers, and some organizations have their own publications like the newsletter, magazines and journals. Those who have taken membership have been receiving the publications as per the publication frequencies. It means the membership of environmental organizations/societies is beneficial to members to generate knowledge about environmental protection. Unlike the urban areas, the majority of the male and female respondents live in rural areas. Residential background plays an important role in the growth and development of an individual attitude towards environmental protection. Little Flower (2006) showed that students belonging to the rural background are comparatively better in terms of their environmental attitude and awareness than the students belonging to the urban background (Raju, 2007; Sundra, 2005). Educational institutions can incorporate environment-related courses in the course curricula (Nagra, 2010). Students are the course's target beneficiaries that can support developing positive feelings towards environmental protection (Mackey, 2012; Thapa, 1999) and encouraging their family members, neighbours and relatives to take care of the environment (Ballantyne, 2010). In the context of faculty who have taught courses and acquired more knowledge before teaching the students about the environmental courses, they search for innovative and new ideas. Every year, at global and national levels, environment-related days are celebrated on different themes and slogans related to environmental protection for encouraging the students and people and to take care of environmental protection, which makes their nearby surroundings safe and clean to enjoy a safer, cleaner and more prosperous future (Anonymous, 2018). Male and female respondents had medium awareness about environment-related days. The concerned organizations' responsibility is to celebrate environmental protection Days every year to create mass awareness about the importance of the environment in the ecosystem. Environmental protection is the responsibility of both males and females. It can prevent and protect harmful impacts on environmental damage. Nowadays, environmental protection awareness information through campaigns and activities organized by the different government and private organizations has a good impact on influencing the human attitude (Gender Tool Box, 2016). The gender equality approach is currently needed to pay attention to the equal participation of women and men in various environmental management activities. In the present investigation, females have less participation in environmental management-related activities, and both were found medium participation in environmental-related activities

(Luna et al., 2015; Sivamoorthy et al., 2013). Waste management has become one of the key environmental concerns from the past decades, facing numerous global challenges. Vast quantities of municipal and industrial wastes are produced daily worldwide as a consequence of human activities. Solid waste increasing the environmental risk (Jerry, 2015) by the waste products, including human health risks, ecosystem degradation, contamination of soils and water, becomes more serious (United Nations Environmental Programme, 2011). This effect can be minimized by properly implementing waste management practices, including separating recyclable materials from non-recyclable waste (Ayodeji, 2010; Leton and Omotosho, 2004). In this research, most males and females were always taking care of the recyclable and non-recyclable wastes during the management of waste like kitchen, plastic, glass, pesticides/insecticides and bags of polythene waste (Ifegbesan 2008). Rapid access to information on social media has been increasing exponentially over recent years (Frazier, Culley, Hein, Williams and Tavakoli, 2014; Rauniar et al., 2014). Nowadays, the government and the concerned organizations for rapid dissemination of information and instant messaging are using social media like Television, Radio, Facebook, WhatsApp, YouTube and their websites (Eliana Andréa Severo et al. 2019; Dobson 1997; McQuail 1994) in images, videos or texts message (Kaplan & Haenlein, 2010; Kietzmann, Hermkens, McCarthy, & Silvestre, 2011). Through these, people can obtain information instantly and act accordingly. These are the good platforms for rapidly changing knowledge, behaviour and attitudes of the people in mass quantities in a particular phenomenon. Many concerned organizations are sending their information to the public via a social media platform regarding environmental protection. Due to the availability of time and economic conditions of the people, social media accessibility has increased or decreased. Most of the males have the habit of watching the news every day. They keep abreast with the happenings and gather up to date information and maintain their status in the surroundings. To achieve this, they are proactive on social media. Considering this, compared to females, most of the male respondents were always using social media platforms like WhatsApp followed by Television, YouTube, Facebook and Radio to obtain information (Cara et al., 2018) regarding environmental issues. Gender attitude towards environmental protection has been the focus of many studies in which it is accepted as a determining factor in human behaviour. Human behaviour towards environmental protection is shaped by an inclusive perception of the interaction between men and the environment. The interaction between and men and the environment is evaluated in two ways, i.e. human-centred perspectives environment as a immense resource for the living things and environment-centred context it does not agree and takes the environment as an entity of its own (Gulcin et al., 2017; Des Jardins 2012). In the current investigation, the positive attitude of the male and females towards environmental protection was representative of a human-centred context (Gulcin et al., 2017). The majority of the male respondents understood, more than the female respondents, that the excess use of chemical pesticides is hazardous to the environment and green zone surrounding the home, which improves air quality. Female respondents have a more favourable attitude than males to green manuring as an effective source to promote an eco-friendly environment for agricultural development and organic food to minimize environmental damage. We found that most of the male and female respondents' attitudes were moderate towards environmental protection. Attitude and risk perception of the gender were observed to differ in the male and female category depending upon their education, experience and awareness about environmental protection activities. Compared to the male and female, males have greater exposure to environmental issues while working in office work and house. They have also developed favourable, more positive attitudes towards environmental protection. Determining the level of attitudes of

males and females towards environment protection is medium. So, taking necessary measures in line with results to improve the attitude levels through organizing awareness programs, activities, upgrading and revising course curriculum is of great importance in eliminating and preventing environmental problems. This study shows that environmental education is a never-ending and lifelong process that cannot be limited to educational institutions and various organizations. NGOs, grassroots organizations and social media are all significant functions in providing information and increasing environmental protection awareness. All the educational institutes, state and private organizations should organize and coordinate activities to develop a positive attitude towards environmental protection. In turn, it will be helpful to make the environment pollution free and keep human beings healthier and prosperous.

## 5 Conclusions

This research recognized the results of gender attitude towards environmental protection. Firstly, the study collected data from the participants who have attended the training programmes on environmental protection through structured online questions. This investigation produced useful information for developing an effective environmental protection plan. The results concluded that gender attitudes are significant because they affect environmental issues, environmental protection and people. Everyone, including students and faculties, has the responsibility to protect the environment. The majority of the males and females felt that green manuring is a valuable source to promote an eco-friendly environment for agricultural development and green zone surrounding due to air environment experiencing both male and females the improvement during the pandemic outbreak. During the lockdown period, people had more free time to participate in home cleanliness and social media, which increased their desire to be present online. As a result, gender attitudes changed towards environmental protection, and the protected environment would pave the way for the prevention of pandemic diseases. Basic information on gender issues and specific environmental protection measures can be obtained from social media. In this study, female respondents were more conscious about environmental protection than male respondents. There is an urgent need for qualitative studies to recognize the underlying reasons for this evaluation. The Environmental Protection Authorities and the Government should pay more attention to attitudinal changes towards environmental protection. The study also found that there is an overall impression of moderate attitude of gender towards environmental protection. There is a need to organize social activities, panel discussions, conferences and seminars for the benefit of both male and female participants to encourage high and positive gender attitudes towards environmental concern.

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## Declarations

**Conflict of interest** All the authors declare that they have no conflict of interest.

**Ethical approval** This article does not contain any studies with human participants or animals performed by any of the authors.

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