

## Perceptions of medical students regarding dimensions of environmental wellness

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### Abstract

**Objective:** To explore the status of awareness on environmental wellness in medical students of Karachi.

**Methods:** The cross-sectional questionnaire-based survey was carried out at Bahria University Medical & Dental College, Karachi, from January 2009 to July 2013, and comprised randomly selected medical students. The response options were; never, sometimes, mostly and always (numbered 0-4) and these were analysed in terms of frequency, proportion and percentages by Predictive analysis software version 18.

**Results:** Out of 800 questionnaires distributed, 736(92%) were received fully completed. There were 210(28.5%) male and 526(71.5%) female respondents, with a male-to-female ratio of 1:2.5. Female medical students were more serious in taking care of their environment tasks ( $p<0.0001$ ). They knew their responsibility to preserve environment and consciously tried to conserve energy more than the male students ( $p=0.034$ ). The proportions of admitting disposal of garbage in dustbins was found more in females than males ( $p<0.0005$ ). Though 486(66%) participants were interested in knowing about environmental problems, females tended to be more in liking greenery in their place of residence ( $p<0.0005$ ) and lived in harmony with nature and universe ( $p<0.001$ ).

**Conclusion:** Medical students were aware of the concept of environmental wellness, but female medical students had a better perception and were a step ahead in its realisation.

**Keywords:** Wellness, Environmental wellness, Wellness wheel, Medical students, Pakistan. (JPMA 66: 373; 2016)

### Introduction

Wellness is a state of well-being of an individual. World Health Organisation (WHO) established a holistic definition of health as a "state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity".<sup>1</sup> The differentiation of health and wellness is based on the fact that health is a state of being, whereas wellness is actually a process of well-being which comprises various spokes or wheels which constitute a wellness wheel (WW).<sup>2</sup> The various known dimensions of WW are physical, emotional, social, intellectual, occupational, spiritual together with environmental wellness (EnvW) to recognise the important impact of surroundings on the well-being of an individual.<sup>3-5</sup>

EnvW is knowledge of the state of the affairs of our planet earth, nature and the various effects of our everyday habits on its physical environment. EnvW is thus aimed at preserving a way of healthier life that enhances harmony with the earth, causing least possible harm to it. It

comprises all socially responsible activities to look after the environment. Renger et al. emphasised that EnvW promotes balance in the individual's relationship with nature and community resources available, like involvement in a recycling programme or community health projects.<sup>6</sup> Anspaugh et al. identified safety of food and water supply, infectious diseases, violence in society, ultraviolet radiation, air and water pollution and second-hand tobacco smoke as potential agents of threats to EnvW.<sup>3</sup> Therefore, it is important to lead a lifestyle that is in harmony with environment, meaning to take care of our planet earth, nature and all the living species existing on it. The respect for other organisms living in our environment is just as obligatory as is the respect for the physical environment.

Literature search showed non-existing local references of EnvW topic related to health profession in Pakistan, exposing wide gaps present in our medical professional research data. Therefore, to fill these gaps, the current study was planned to serve as a template in our country on this important and neglected area. We have conducted various studies<sup>4,7</sup> to evaluate awareness of different aspects of WW on medical students and the current study is a part of exploring WW spokes.

### Subjects and Methods

The cross-sectional, single-centre, questionnaire-based

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**Annexure:** Environmental dimensions.

1	I know my responsibility to preserve the environment.	1	2	3	4
2	I consciously try to conserve energy (electricity, heat, light and water)	1	2	3	4
3	I am interested to know about environmental problems	1	2	3	4
4	I dispose of garbage in dustbins.	1	2	3	4
5	I like greenery in my house	1	2	3	4
6	I live in harmony with nature & universe	1	2	3	4

survey was carried out from January 2009 to July 2013 at Bahria University Medical and Dental College, Karachi, after approval from institutional review board. Using convenience sampling, the study comprised students from first till final year MBBS. The participants included students of all ethnic groups and both genders irrespective of religion with age ranging from 19 to 24 years who consented to take part in the study.

Domains of EnvW awareness included knowledge of responsibility to preserve environment, conservation of energy (electricity, heat, light, water, etc), environmental problems (volunteering time for environmental conservation projects.), disposal of garbage in dustbins, in-house greenery and harmony with nature (practice of recycling, cleaning of environment-air, soil and water). The

close-ended questionnaire to evaluate aspects of EnvW on four points: never, sometimes, mostly, always (Annexure); numbering 0-4 from lowest to highest ranks. It was tailored from WW.<sup>8</sup> A brief description of all the terms used in the questionnaire was given to the participants. Computation of frequency, proportion and percentages was executed with the help of Predictive Analysis Software (PASW) version 18. Consistency in the responses of the participants was checked by Cronbach's alpha. For checking the overall perspective related to EnvW, the responses of six dimensions were summed up to get aggregate environmental wellness score (EWS). This score was expressed as mean  $\pm$  standard deviation (SD). Kolmogorov-Smirnov's statistic was used to check whether EWS was normally distributed. Since, p value came out to be more than 0.05, indicating that the score was non-normal, therefore the comparison of EWS between male and female students was executed by Mann-Whitney U test. Individual dimension of EW was expressed with frequency and percentages. Chi-square test was run to compare the presence of EW aspects between the two genders.  $P < 0.05$  was set to confirm presence of difference in responses.

**Results**

Out of 800 questionnaires distributed, 736(92%) were

**Table:** Perspective of students towards different dimensions of Environmental Wellness.

Domains representing environmental wellness		Male N=210	Female N=526	Total	P value
Know Responsibility To Preserve Environment	Always	121 (58%)	346 (66%)	467 (63%)	0.006
	Usually	48 (23%)	122 (23%)	170 (23%)	
	Sometimes	25 (12%)	45 (9%)	71 (10%)	
	Never	15 (7%)	13 (2%)	28 (4%)	
Conserve Energy	Always	87 (41%)	273 (52%)	360 (49%)	0.034
	Usually	61 (29%)	144 (27%)	205 (28%)	
	Sometimes	45 (21%)	82 (16%)	127 (17%)	
	Never	17 (8%)	27 (5%)	44 (6%)	
Environmental Problems	Always	79 (38%)	237 (45%)	316 (43%)	0.314
	Usually	54 (26%)	125 (24%)	179 (23%)	
	Sometimes	53 (25%)	112 (21%)	165 (24%)	
	Never	24 (11%)	52 (10%)	76 (10%)	
Garbage In Dust Bin	Always	109 (52%)	360 (68%)	469 (64%)	<0.0005
	Usually	59 (28%)	108 (21%)	167 (23%)	
	Sometimes	32 (15%)	45 (9%)	77 (10%)	
	Never	10 (5%)	13 (2%)	23 (3%)	
Greenery In place of residence/House etc	Always	152 (72%)	453(86%)	605 (82%)	<0.0005
	Usually	34 (16%)	38 (7%)	72 (10%)	
	Sometimes	14 (7%)	23 (5%)	37 (5%)	
	Never	10 (5%)	12 (2%)	22 (3%)	
Harmony With Nature	Always	119 (57%)	381 (72%)	500 (68%)	<0.0001
	Usually	54 (26%)	109 (21%)	163 (22%)	
	Sometimes	22 (10%)	23 (4%)	45 (6%)	
	Never	15 (7%)	13 (3%)	28 (4%)	

Values are numbers ()represents percentages.

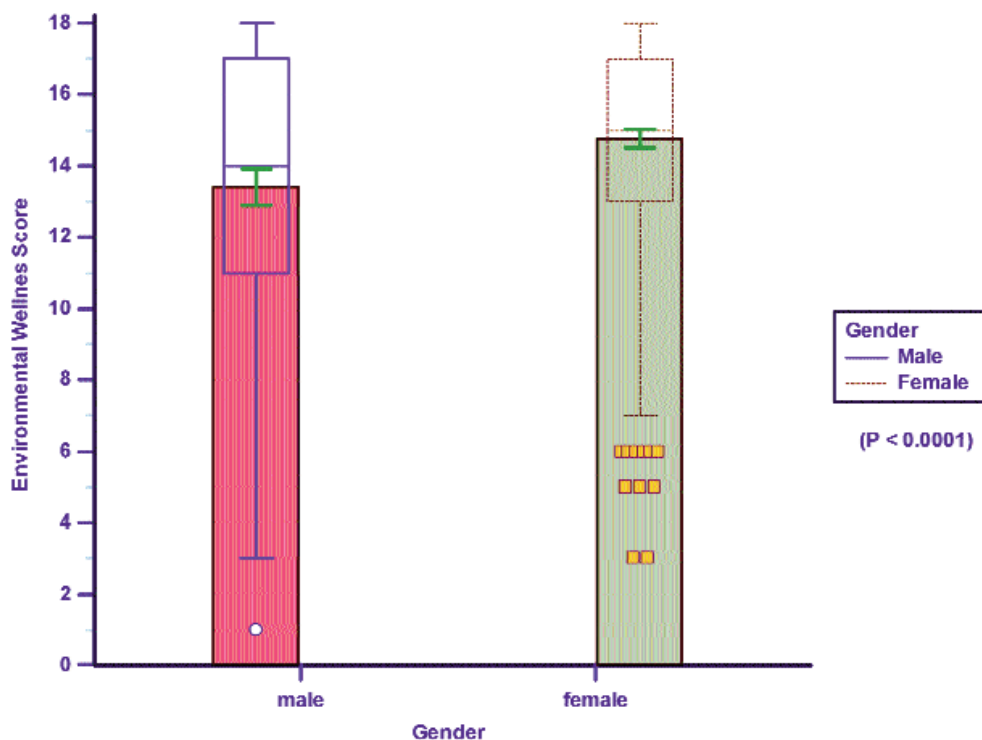


Figure: Environmental Wellness Score between Male and Female Students.

received fully completed. There were 210(28.5%) male and 526(71.5%) female respondents, with a male-to-female ratio of 1:2.5. Cronbach's alpha value was computed to be 73% indicating good consistency in the response rates of students. Mean female score was  $13.39 \pm 3.80$  compared to  $14.78 \pm 3.03$  of the males ( $p < 0.0001$ ), indicating more seriousness about taking care of environment wellness.

The proportion of knowing the responsibility to preserve environment was considerably large in the study population, and more so in females ( $p = 0.006$ ) (Table). Besides, 360(49%) students consciously always tried to conserve energy. Only 44(6%) students never tried the same consciously. Females were found to be significantly more conscious in this regard ( $p = 0.034$ ). Only 316(43%) were interested in knowing about environmental problems ( $p = 0.314$ ). Disposing garbage in dustbins were observed significantly more in females ( $p < 0.0005$ ). Of the total, 605(82%) liked greenery in their respective places of residence. Though 500(68%) students lived in harmony with nature and universe, female students were significantly more inclined to liking greenery in their houses ( $p < 0.0005$ ) and living in harmony with nature and

universe ( $p < 0.0001$ ).

### Discussion

Human beings and nature are both responsible for creating a sustainable environment which emphasises mutual preservation of each other's right for harmonious existence and survival.

Environmental well-being develops synchronisation with nature and enables one to take measures to steer clear of environmental hazards like air pollution, land pollution, water pollution and noise pollution.<sup>9</sup> The critical component of EnvW enables one to enjoy pleasure of availing spare-time prospects and adherence to all associated activities

responsible for a healthy life and associated environment.<sup>10</sup> This awareness is also important for medical students for better understanding and practical execution of performing community health services in Pakistan.

Physical activity for humans is an important component of healthy lifestyle which limits obesity, high blood pressure, high blood cholesterol, diabetes, heart disease and associated onset of stroke.<sup>11</sup> It can be in the form of brisk walk, outdoor active games or anything else which makes use of musculoskeletal system, to burn the consumed excessive calories and reduce body mass index (BMI).<sup>12,13</sup> Physical or cultural accessibility to green areas can turn out to be a contributing factor to amplify the probability of increased physical activity and outdoor games.<sup>14</sup> Performing physical activity in a green space thus has a double health benefit in terms of inhalation of fresh air with greater consumption of pollution free oxygen, effective use of musculoskeletal activity together with the overall benefit of stress reduction.

Green places are used for the maintenance of peace, fun, activity, family times, exercise, and sport all of which together form basis of healthy outdoor lifestyle for physical and mental well-being of an individual.<sup>15</sup>

International studies have acknowledged optimistic health effects of green areas as an air cleanser and stress reducer on human health.<sup>15</sup> Studies have shown that stressed individuals feel better after exposure to natural scenes. In addition, greenery and physical activity also enhance intellectual growth.<sup>13</sup> In our study, female medical students preferred to have greenery in their homes and hostels compared to the male students.

Environmental well-being includes trying to live in harmony with nature, prevent sources of all kinds of pollution and their associated hazards. The association of outdoor air pollution with stroke has been well documented.<sup>16-18</sup> It is thus necessary to eradicate the harmful effects of smoke released from automobiles in order to avoid air pollution.<sup>19</sup> In our study 66% medical students were aware of the environmental problems which arise due to different types of pollution. This awareness can reduce the negative impact of our behaviour towards the environment and vice versa.

Energy conservation, a domain of EnvW, refers to reduction in the use of energy which can be practised in a number of ways. In a developing country like Pakistan where we have limited resources, conservation of energy can help in reducing economic crisis. Female medical students were in the habit of saving financial capital by switching off extra lights and using minimum electrical appliances for energy conservation. Another form of energy conservation is recycling of waste which is essential to preserving natural environment, conserving energy and protecting humans from a number of epidemics.<sup>20</sup>

The measures taken to improve EnvW can get better well-being of individuals, develop harmony with nature and at the same time make the earth friendly and our planet a better place to live in.<sup>21</sup>

Our study is limited in the sense that it's a single-center study with validity of questionnaire not tested and it does not have comparable local studies. However, it is the first study conducted in Pakistan to give an insight on EnvW. The significance of this study is more relevant and important with reference to global climatic changes and the fact that our country is going through a tough stage of energy crises, water scarcity, pollution hazards and associated health issues. The increased awareness of EnvW in population, especially medical students, might help to preserve nature, clean environment, mental revitalisation and acquiring high executive functions. We think time has come that all health-related professionals and educators should take a lead in addressing health and its associated wellness issues and act as role models so

that a common Pakistani may also practice and enjoy EnvW in the country.

More studies are needed to explore EnvW and its impact on various aspects of health in Pakistan. It is required that basics of EnvW awareness already taught at Cambridge-based education system should be introduced at primary and secondary level education in our country to not only nip the evil in the bud, but also to reduce gaps/standards existing in our education system. A joint effort by citizens, city planners, government sector, non-profitable organisations and public funding is required to educate individuals via different modes with the support of electronic and print media to create awareness on occupational health hazards in all health profession-related areas; on environmental issues of air, water, land and noise pollution with emphasis on risks associated with second-hand smoke due to passive smoking and ultraviolet radiation; on advantages of walking or bicycling whenever possible instead of using cars, recycling of wastes and conserving energy, water and forests; and on exploring hidden areas related to EnvW and health academics in Pakistan.

## Conclusion

Female medical students in the study were a step ahead of their male counterparts in being aware of dimensions of EnvW with all the steps that could develop harmony with nature, conserve energy, and promote preservation of a sustainable environment.

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