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Determination of Risk Perceptions of University Students and Evaluating Their Environmental Awareness in Poland

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Abstract. In this study, it was aimed to determine perceptions and awareness of university students in environmental and technological matters. In this context, a total of 788 students from Warsaw University of Life Science were asked 11 questions about different subjects in the 2014-2015 academic year. Face to face interview method was preferred to ask the questions. The data obtained were analyzed by using SPSS 20.0 software package and Frequency and Crostabb methods were used. As a result of the study, students were observed to be caring about social risk factors most among environmental and social risk factors; and terrorism was considered to be the most important social risk factor. On the other hand, students were observed to be care about water pollution most among technological and natural disasters as well as environmental problems that may occur in the future and considered nuclear power plants (51%) as the most important technological risk sources followed by chemical plants (39%) and storing nuclear waste (37%), respectively. 38% of the students want a nuclear power plant to be built in Poland, whereas 37% don't want a nuclear plant and the remaining 25% have no idea about the matter. According to the results of questionnaire, they are concerned about receiving the correct information in case of an accident (48%) and they didn't receive any civil defense training in order to protect themselves in case of such accidents and disasters. Internet seems to be an important information source for students (92%) about environmental issues. Media is also another information source in such issues.

Keywords: Environmental perception; Environmental awareness; Technological risk perception; Social risk perception

Polonya'daki Üniversite Öğrencilerinin Risk Algılarının Belirlenmesi ve Çevre Bilincinin Değerlendirilmesi

Özet. Bu çalışmada, üniversite öğrencilerinin çevresel, teknolojik konulardaki risk algıları ve farkındalıkları belirlenmeye çalışılmıştır. Çalışma kapsamında, Warsaw University of Life Science da okuyan toplam 788 öğrenciye 2014-2015 yılında toplam 11 başlık altında soru yönlendirilmiştir. Soru sorma biçimi olarak; yüzyüze sorma yöntemi tercih edilmiştir. Anket formlarıyla elde edilen veriler SPSS 20.0 paket programıyla değerlendirilmiş ve sıklık analizi ve çapraz sorgulama yöntemleri kullanılmıştır. Çalışma sonucunda; üniversite öğrencilerinin çevresel ve sosyal risk faktörlerinden en fazla sosyal riskleri önemsedikleri ve terörizmin birinci sırada en önemli risk faktörü olarak değerlendirdikleri ortaya çıkmıştır. Öğrenciler teknolojik ve doğal afetler ve gelecekte olabilecek çevresel problemler konusunda ise; en fazla su kirliliğinden kaygılanmakta ve teknolojik kazalar içerisinde ise en tehlikeli teknolojik risk olarak nükleer enerji santralleri (%51), ikinci sırada kimyasal fabrikaları (%39), üçüncü sırada nükleer atıkların depolanmasını (%37) risk olarak değerlendirmişlerdir. Polonya'da nükleer santral yapılıp yapılmaması konusunda; öğrencilerin %38 nükleer santral yapılmasını isterken, %37 si nükleer santral istemediğini, %25 si ise bu konuda herhangi bir fikri olmadığını beyan etmiştir. Olabilecek bir kaza sonucunda yöneticilerin doğru bilgilendirme yapacağı konusunda kaygılarının olduğu (%48) ve herhangi kaza durumda kendilerini korumak amacıyla sivil savunma eğitimi almadıkları anket sonucunda ortaya çıkmıştır. Öğrencilerin çevresel konularda en önemli bilgi edinme kaynaklarının internet olduğu (%92) ve medyanın önemli bir bilgi edinme kaynağı olduğunu göstermektedir.

Anahtar Kelimeler: Çevresel algı; Çevresel farkındalık, Teknolojik risk algısı; Sosyal Risk algısı

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1. INTRODUCTION

Risk perception has been an important research topic since the 1970s. Because the risk perception is an important factor affecting decisions and attitudes of politicians [1]. Risk can be defined in a manner consistent with responds, awareness and response of people to the risks or hazards [2-6]. The effects of technological and natural risks are similar to each other since they cannot be forecasted and they occur suddenly [7]. The number of studies conducted on risk perception is increasing recently and the knowledge about how people perceive the risks in their daily lives is also developing [8,9]. Risk perception plays an important role in people's decisions. The basis of the dispute between technical experts and members of the general public is differences in risk perception. After Fukushima disaster in 2011, industrial and radiation safety has become an important issue [10].

Technologies create physical and social impacts on the natural and cultural environment [11]. Nuclear plants, chemical plants, large dams and treatment plants are highly efficient technologies for large-scale facilities [12]. The rapid progress of high-impact technologies in the last century arises concerns about the use, production and destruction of these technologies [13]. Due to legal requirements, manufacturers and those managing high-impact technologies demand more information. Awareness of people increase with technological accidents [12].

Environmental awareness is being aware of the importance of relationship between people and their environment. People with environmental awareness are expected to establish a relationship with the environment. This is not a responsibility only for the environment, but also for the society [14]. Behaviors of people towards environmental problems are important to understand how they perceive social, individual risks as well as risks at the group level. Factors determining the environmental awareness is very versatile. The level of education is one of the most important factors influencing people's attitudes and behaviors [15]. On the other hand, environmental awareness enables people and social groups gaining sensitivity awareness against social environmental problems. This is will help eliminating not only air and water pollution, but also diseases, hunger, malnutrition and poverty, destruction of forests, destruction of wildlife and accumulation of waste. Educators and environmental experts state that environmental awareness should be included at all levels of school education in the solution of environmental problems [16].

In this study; it was aimed to determine views and perceptions of students of Warsaw University of Life Science (Poland) in regard with environmental issues and environmental awareness. The similar resources have also been done to understand how people consider environmental risk in other countries [19-20].

2. MATERIAL AND METHOD

This study was conducted at Warsaw University Life Science in the province of Warsaw (Poland) in 2014-2015 academic year. The questionnaire including 11 questions was administrated on a total of 788 students. The data obtained through the questionnaires were evaluated with SPSS 20.0 software package. The relationships between answers were tried to be determined by using *Frequency and Crostabb* methods as well as the analyses performed. The age range and educational levels of the participants are given in Table 1.

Table 1. Gender and age range of students that completed the survey.

Gender	Freguency	Percent (%)
Female	439	56
Male	279	34
Age		
18-25	726	94.5
26-35	36	4.7
36-45	5	0.7
46>	1	0.1

2.1 Environmental and Social Risk Perception

"Please make a priority list for the current questions asked to you in regard of anxiety levels you feel?" questions were asked in order to evaluate environmental and social risk perceptions of the students. In Figure 1, answers of students in response to this question were evaluated statistically and shown in graphs. 27% of the students consider terrorism as the most important risk factor followed by nuclear risks with 18%, unemployment with 14%, traffic accidents with 10%, alcohol and drug use with 8%, environmental hazards with 7%, globalization with 5%, AIDS with 4%, chemical risks with 3% and inflation with 2%, respectively. Students consider social and environmental risks more important. Although there is no terrorism in Poland, security is observed to be the most important risk factor perceived by students. Students considered nuclear power plants as the second risk factor. Although there is not a nuclear plant established in Poland, this shows how Chernobyl nuclear accident that occurred in Russia in 1986 and Fukushima nuclear power plant accident occurred in Japan affected people.

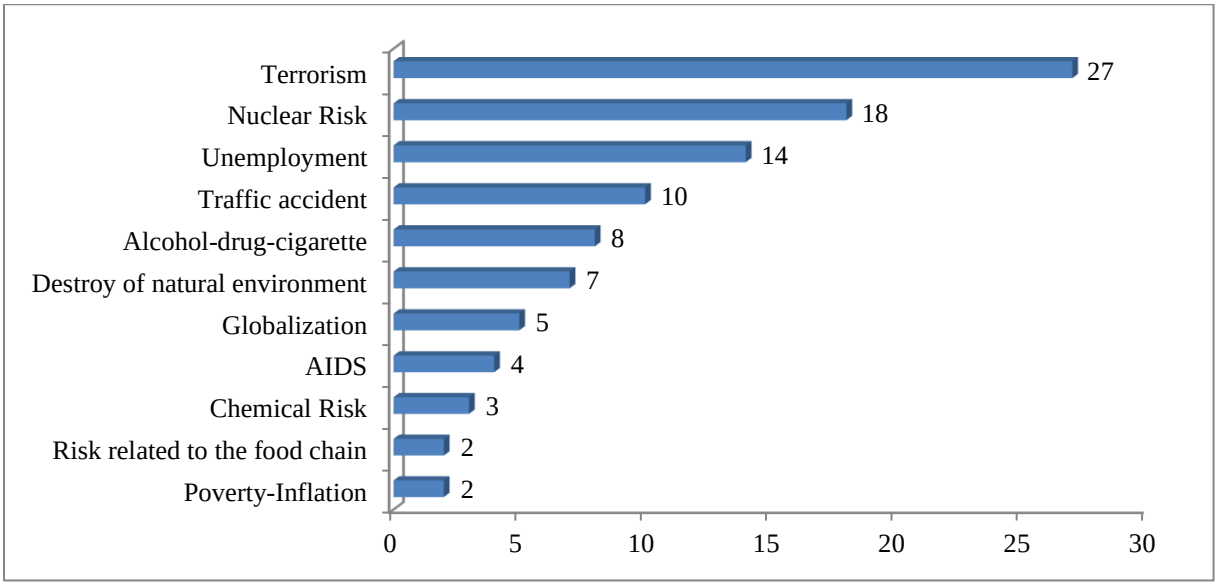

Figure 1. Environmental and social risk perception of the students (n =788).

2.2. Perception of Different Environmental Risks

Students were asked to evaluate 21 possible environmental risk factors according to the risk ratings. As seen in the Figure 2, 42% of the students selected water pollution as the highest risk, which is followed by air pollution with 37%, lake and marine pollution with 33%, nuclear wastes with 32%, global

warming with 31%, chemical wastes and energy crisis with 29%, respectively. Students perceive soil pollution (51%), ecosystem damage (47%) and accidents like Chernobyl (47%), chemical plants (47%), air pollution (46%) and pollution of lakes, rivers and seas (45%) as moderate risk factors. Cell phones (55%), noise pollution (44%), earthquakes (45%), dam failure (41%) and food stuff (40%) are considered to be low risk factors. Therefore, it can be concluded that students are concerned about environmental pollution that may emerge in the near future.

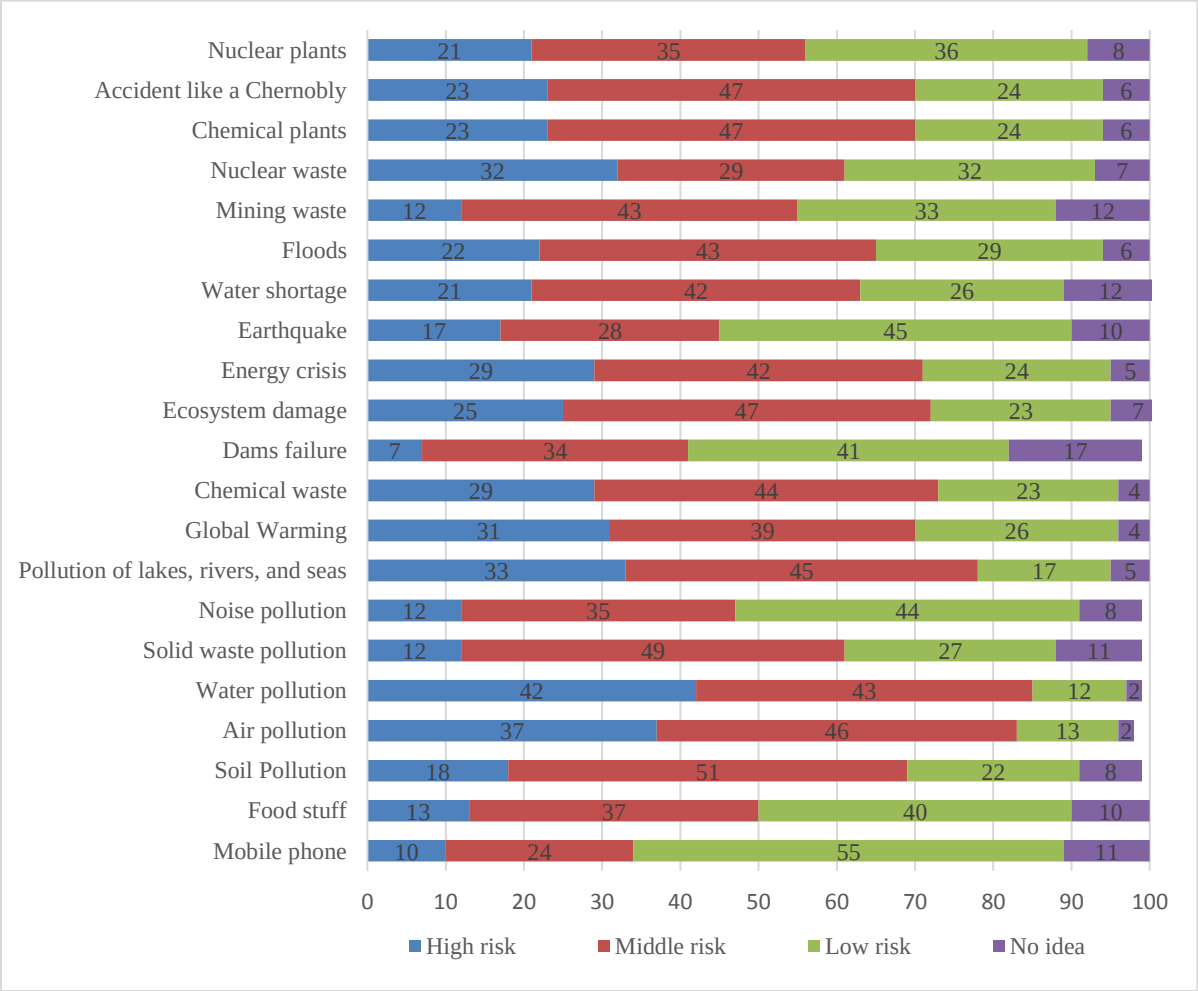

Figure 2. Perception of different environmental risks (n=788).

2.3. Technological Risk Perception

Some questions were asked to measure risk intensity of technological accidents. As a result of the questionnaire, the most important technological risk was found to be nuclear power plants (51%), followed by chemical plants (39%) and storing nuclear wastes (37%), respectively. The lowest risk factors were found to be in air freight (17%), mining (12%), railroad transportation (12%), sea freight (11%) and dams (10%), respectively (Figure 3).

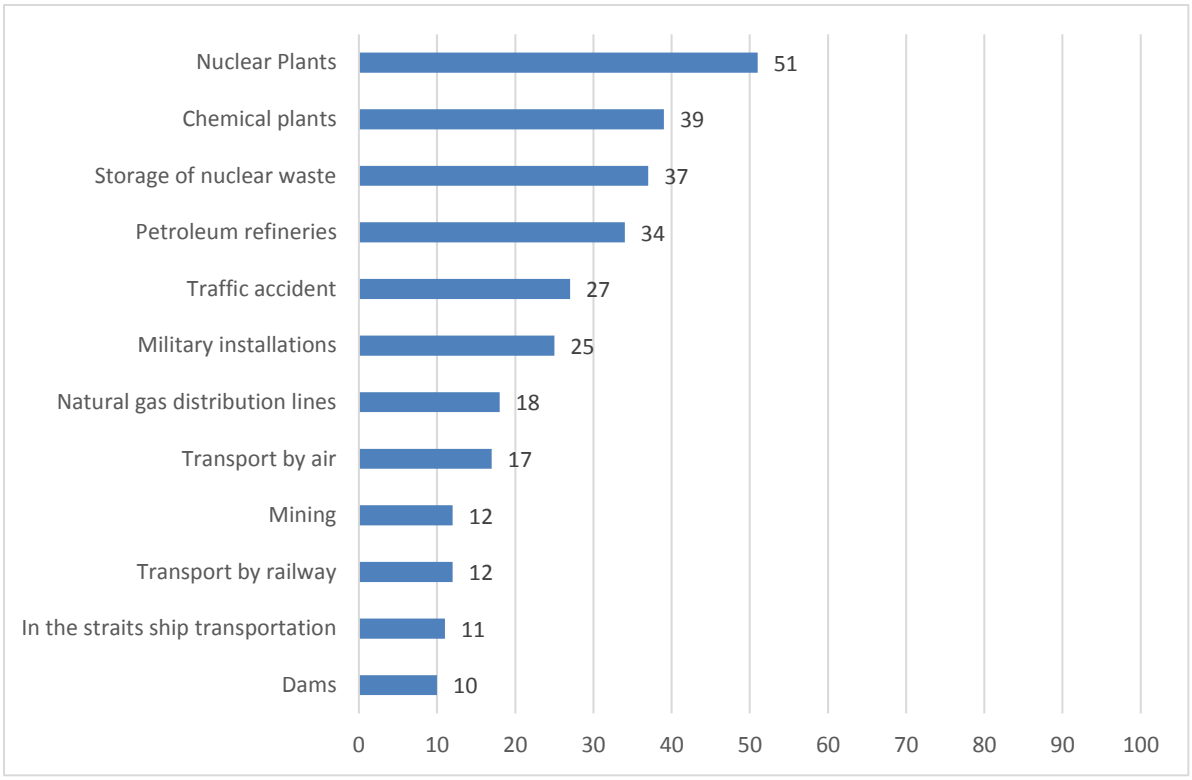

Figure 3. Technological Accident Perception of Students (n=788).

2.4. Nuclear Power Plants and Risk Perception

Students were asked two questions in order to determine their thoughts about nuclear power plants. The first question was "Do you want nuclear plant in Poland?" and the second question was "Do you think that there will be accidents like Chernobyl in Poland, if a nuclear plant is constructed in Poland?" As a result of the questionnaire, it was determined that 38% of the students want a nuclear power plant to be built, whereas 37% don't want a nuclear plant and the remaining 25% have no idea about the matter. At the same time, student think that the possibility of an accident like Chernobyl is unlikely to happen (48%). As a result, it can be indicated that students are not very knowledgeable about nuclear energy (Figure 4).

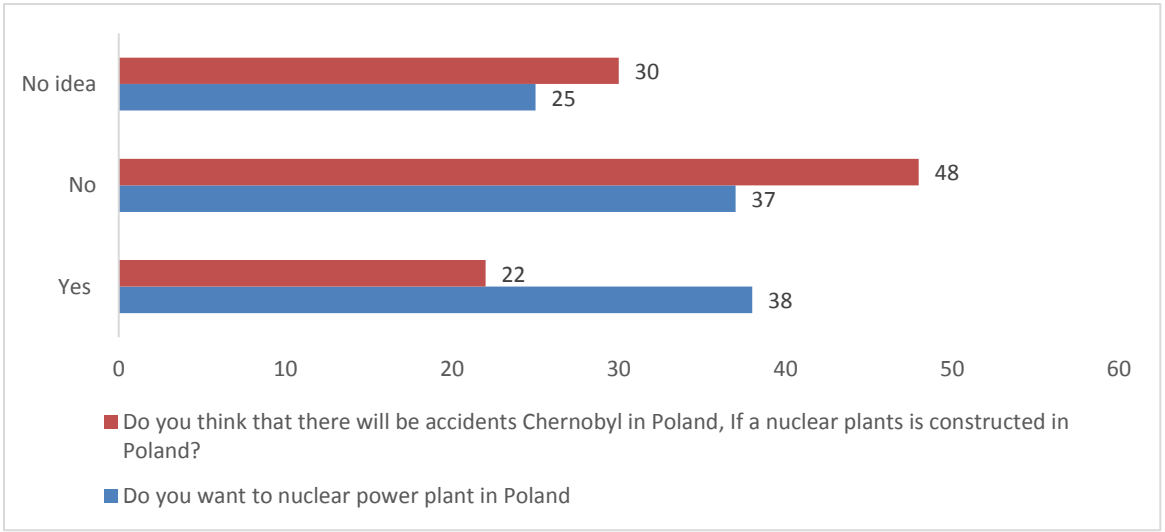

Figure 4. Risk Perceptions of Students about Nuclear Power Plants (n=788)

2.5. Concerns about being Correctly Informed

In the study, it was aimed to determine whether students trust authorities about being correctly informed about environmental incidents. For this purpose, they were asked "Do you believe that in case of environmental disaster the authorities will inform the public correctly?" Considering the answers of students, 48% of the students think that they are not informed correctly, while 30% of them stated that they are not informed at all and the remaining 22% have no idea (Figure 5).

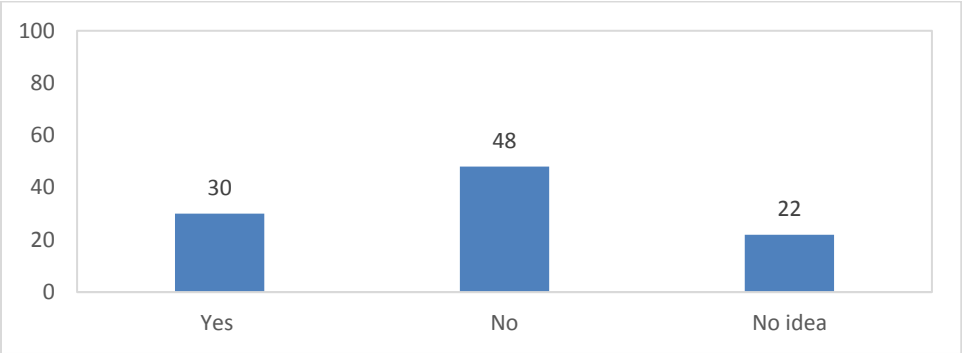

Figure 5. Trust in information source (n=788).

Students were asked "Have you participated in any disaster management (civil defense in emergency case) training operation?" in order to determine whether they have participated in any disaster management and civil defense training program. As a result, it was determined that 63% of the students didn't participate in any civil defense training program (Figure 6).

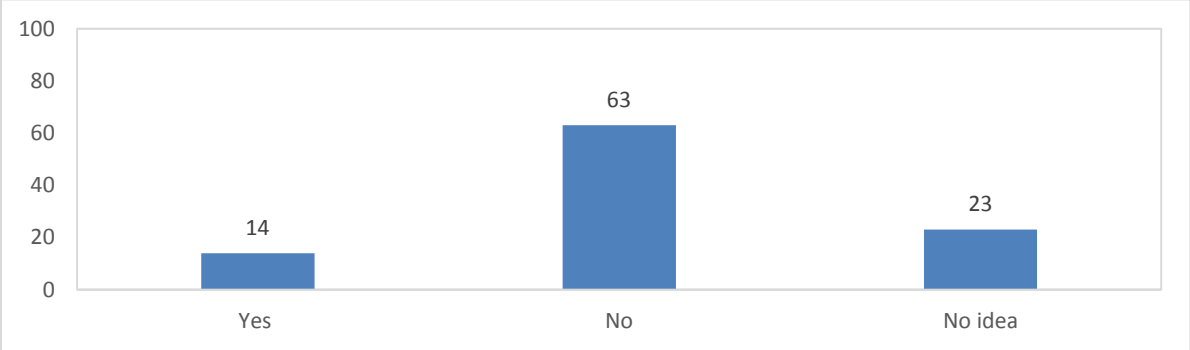

Figure 6. Students' Awareness about Accidents and Disasters (n=788).

2.6. Information Source

Students were asked "Which information sources and communication tools do you use to receive information about environmental issues?" As a result of the frequency analysis, it was determined that students use the Internet most to be informed about environmental issues (90%) followed by television (60%), radio (32%), newspapers and journals (26%) and finally advertisement and posters (7%), respectively (Figure 7). These results are similar to other countries. According to a research conducted in Shanghai, the use of newspapers and journals as an information source was found to be reduced in the last 5 years, while the use of Internet was increased [17]. In a study conducted on 200 students, newspapers and television was found to be the main sources to develop environmental awareness [18].

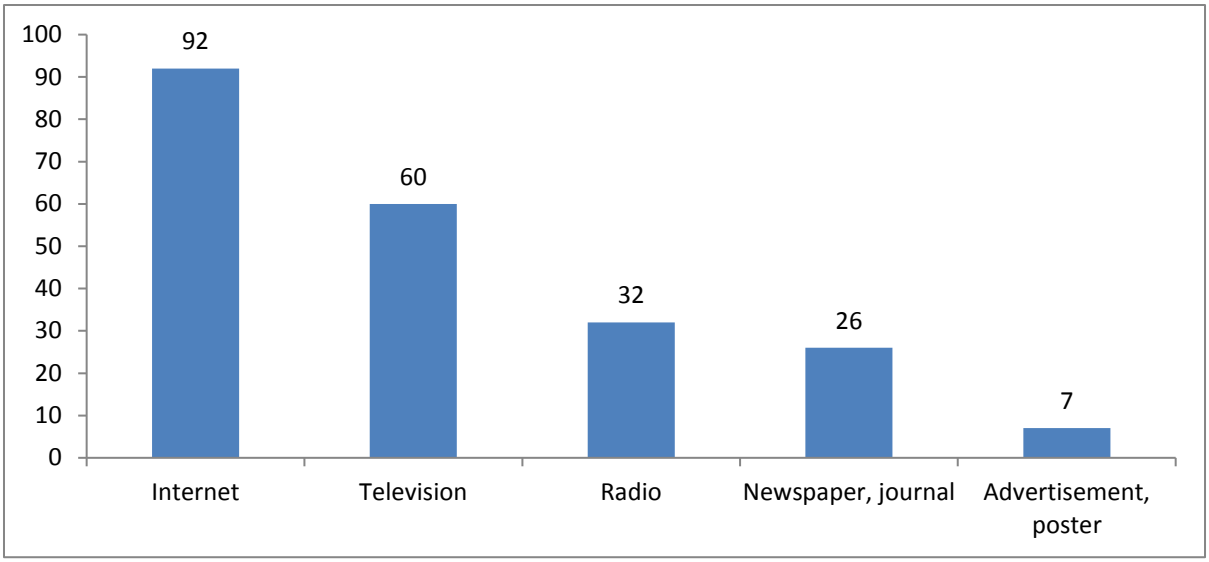

Figure 7. Information sources used by students about environmental issues (n=788).

3. RESULTS

In this study, it was aimed to determine perspectives of students of Warsaw University of Life Sciences (Poland) about current environmental issues and environmental awareness of these students.

As a result of the study, students were observed to be caring about social risk factors most among environmental and social risk factors; and terrorism was considered to be the most important social risk factor. Students consider nuclear power plants as the second risk factor. Although there is not a nuclear plant established in Poland, this shows how Chernobyl nuclear accident that occurred in Russia in 1986 and Fukushima nuclear power plant accident occurred in Japan affected people.

Students were observed to be care about water pollution most among technological and natural disasters as well as environmental problems that may occur in the future and considered air pollution and lake and marine pollution as the factors with high risk, respectively. It was concluded that students are concerned about environmental pollution in the future.

As a result of the questionnaire, the most important technological risk was found to be nuclear power plants (51%), followed by chemical plants (39%) and storing nuclear wastes (37%), respectively. The lowest risk factors were found to be in dams and sea freight. Student think that the possibility of an accident like Chernobyl is unlikely to happen (48%). These results show that students are not concerned about nuclear power plants.

According to the results of questionnaire, they are concerned about receiving the correct information in case of an accident (48%) and they didn't receive any civil defense training in order to protect themselves in case of such accidents and disasters.

The most important information source for students was found to be the Internet (92%) about environmental issues, whereas the use of sources such as newspaper and journals seem to be very rare (26%) among students. The use of easy ways such as the Internet (92%), television (60%) and radio (32%) to access information indicates that reading rates are low and media is an important information source among students participated in the study.

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