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Awareness of the Use of Personal Protective Equipment in the Forestry Products Industry*

Orman Ürünleri Sanayinde Kişisel Koruyucu Donanım Kullanımı Farkındalığı

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Abstract

Occupational health and safety is an important issue that increases the satisfaction and productivity of everyone in the workplace by aiming to work in a safe and comfortable way that does not harm the health of the person working in the workplace. Occupational accidents occur as a result of deficiencies or mistakes in these occupational health and safety studies. It is known that most of the work accidents are caused by not using personal protective equipment and unsafe behaviors. Personal protective equipments are products that can be used against many risks in the working environment in order to ensure that employees work in a healthy and safe manner. Within the scope of this study, a questionnaire form prepared by reaching 470 people working in 8 forest products (timber, furniture, board and paper) plants in İzmir and Balıkesir provinces was applied. There are two sections in the questionnaire form, which include some demographic characteristics and awareness of using personal protective equipment. When the results were examined, it was determined that the use of personal protective equipment did not differ according to demographic characteristics, and there were significant differences at the level of forest products subsectors.

Keywords: Occupational health and safety, Personal protective equipment, Forestry products industry

Özet

İş sağlığı ve güvenliği, işyerinde çalışan kişinin, sağlığına zarar gelmeyecek şekilde kendini güvende ve rahat hissederek çalışmasını hedef alarak işyerindeki herkesin çalışma hayatındaki memnuniyet ve verimliliğini artıran önemli bir konudur. İş sağlığı ve güvenliği çalışmalarındaki bu eksiklik veya hatalar neticesinde iş kazaları ortaya çıkmaktadır. İş kazalarının çok büyük bir bölümünün kişisel koruyucu donanım kullanılmamasından ve güvensiz davranışlardan kaynaklandığı bilinmektedir. Kişisel koruyucu donanımlar, çalışanların sağlıklı ve güvenli olarak çalışmalarını sağlamak amacıyla, çalışma ortamındaki pek çok riske karşı kullanılabilecek ürünlerdir. Bu çalışma kapsamında İzmir ve Balıkesir illerinde bulunan 8 adet orman ürünleri (kereste, mobilya, levha ve kağıt) tesisinde çalışan 470 kişiye ulaşılarak hazırlanan anket formu uygulanmıştır. Anket formunda bazı demografik özellikler ve kişisel koruyucu donanım kullanım farkındalığını içeren iki bölüm yer almaktadır. Sonuçlar incelendiğinde kişisel koruyucu donanım kullanımının demografik özelliklere göre farklılaşmadığı, orman ürünleri alt sektörleri düzeyinde ise anlamlı farklılıkların olduğu belirlenmiştir..

AnahtarKelimeler: İş sağlığı ve güvenliği, kişisel koruyucu donanım, orman ürünleri sanayi

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1. Introduction

In today's competitive conditions, the way for businesses to be effective and efficient is to use the production factors correctly. One of the most important of these production factors is the human factor. It is clear that businesses will be more successful with a management style that puts people first and meets basic occupational safety requirements (Kahya et al., 2018).Employees stay at the workplace during the working hours determined by law in order to produce goods and services throughout their working life. In addition to the difficulties brought by the working conditions, the employee also struggles with occupational diseases that may occur due to biological, toxic and radiation. Employees, legal authorities and employers with occupational health and safety (OHS) practices; They try to prevent work accidents and occupational diseases before they occur (Tatlı et al., 2021).

Within the scope of OHS, employers are given the obligation to ensure occupational health and safety of their employees with the law numbered 6331. In the same law, employers have the duty to give priority to collective protection measures over personal protection measures (Resmi Gazete, 2012). In addition, within the scope of the "Regulation on the Use of Personal Protective Equipment at Workplaces", important duties have been assigned to the employers and employees in the selection, use and control of personal protective equipment (PPE) (Resmi Gazete, 2013).

Employees and employers in workplaces have various responsibilities regarding the use of PPE (OSHA, 2000; Taşyürek, 2007; Çetin and Beğik, 2021).

Employees' responsibilities;

• Using PPE correctly,

• Participation in PPE training and meetings,

• Protection, maintenance and cleaning of PPE,

• Notifying the authority when the PPE needs replacement or repair.

Employers' responsibilities:

Conducting risk assessment in every region of the enterprise,

• Choosing the appropriate PPE according to the risk level,

• Providing PPE and giving it to the employee's use,

• Providing training on correct use of PPE

• Re-training and certification in case of changing the workplace or the PPE used

• Documentation of the training of employees regarding the use and wear of PPE.

When both the legislation and the literature are examined, it is seen that the use of PPE is very important. In order to ensure the use of PPE in enterprises, it is stated that training should be given to the employees, and the necessity of protection, the reasons for using the protector instead of or alongside other protection methods and the benefits to be provided by using PPE are also included in these trainings. Besides, it is mentioned that the consequences that will arise when there is no protection, the rules of use of PPE and the situations in which it will not work properly and effectively should be included in the trainings (Hendem, 2007).

The reasons for employees to have occupational accidents caused by PPE have been examined in various studies. Açıkalın (2008) reported that there is a significant relationship between the regular use of PPE and the status of having an occupational accident. Gülhan et al. (2012) stated that the most important factor among the causes of occupational accidents is the insufficient use of PPE. In addition to these studies, it is seen in the literature that many studies have been conducted on the importance of using PPE (Demirbilek and Çakır, 2008; Çalışkan, 2017; Gök-Uğur et al., 2020; Çetin and Beğik, 2021).

Within the scope of this study, it was aimed to investigate whether the use of PPE differs in terms of some demographic characteristics and forest products sub-sectors.

2. Material and Method

In this study, it was aimed to investigate the use of PPE at the level of forest products industry sub-sectors. Furniture, paper, timber and board factories are included in the scope of the study as forest products sub-sectors. For this purpose, a questionnaire was applied to 470 employees in 8 factories(3 lumber, 3 furniture, 1 board and 1 paper factories) located in İzmir and Balıkesir provinces between January and June 2017.The questionnaire forms were distributed to all employees in the relevant factories during the implementation phase, and 470 forms that could be evaluated were taken into account.Each questionnaire form consists of two parts containing some demographic characteristics (7 questions) and five-point Likert type judgments (66 judgments) prepared for determining the perception of occupational health and safety.The questionnaire questions were created using the judgments compiled from the studies in the literature(Tiryaki, 2011; Güngör, 2008; Durdu, 2006; Seyhan, 2009; Terzi, 2013; Arslan, 2014; Koç, 2015; Yeğin, 2015; Çiçek, 2016; Razgratlı, 2016; Pehlivan, 2016).

3. Results

3.1. Reliability and Validity

The construct validity of the scale presented within the scope of the study was examined with the Kaiser–Mayer–Olkin (KMO) test. KMO is an index that compares the size of the observed correlation coefficients with the size of the partial correlation coefficients, and this ratio should be above 0.5 for validity (Sharma, 1996).It was determined that the KMO value of the scale was 0.883 (Bartlett's Test of Sphricity Sig.:0.001).Cronbach's alpha coefficient was also used for scale reliability.This value was determined to be 0.634.In the literature, it is seen that this value takes values between 0 and 1 and scales with values above 0.60 are quite reliable (Kalaycı, 2009). Therefore, it is possible to say that the reliability and validity of the scale are provided.

3.2. Findings on Demographic Factors

Within the scope of the study, the determination of education level, age distribution, gender, marital status, total working time, occupational accident status and field of activity of the participants was aimed. The distribution of the answers to these questions is given in Table1.

Table 1. Distributions of demographic factors.

Demographic Features		**N (Number)**	**Frequency (%)**
Educational status	Primary education	207	44.0
	High school	198	42.2
	Vocational School	36	7.7
	University	26	5.5
	Unanswered	3	0.6
	Total	470	100
Age	18-30	110	23.4
	31-40	201	42.8
	41-50	137	29.1
	51-60	18	3.8
	Unanswered	4	0.9
	Total	470	100
Gender	Male	427	90.9

Demographic Features		N (Number)	Frequency (%)
	Female	23	4.9
	Unanswered	20	4.2
	Total	470	100
Marital status	Married	351	74.7
	Single	89	18.9
	Unanswered	30	6.4
	Total	470	100
Total working time	Less than 5 years	223	47.4
	6-10	96	20.4
	11-20	143	30.4
	Unanswered	8	1.8
	Total	470	100
Occupational accident status	Yes	98	20.9
	No	342	72.7
	Unanswered	30	6.4
	Total	470	100
Fields of activity	Furniture	231	49.2
	Timber	35	7.4
	Board	112	23.8
	Paper	92	19.6
	Unanswered	0	0
	Total	470	100

When the table is examined; it was seen that 44% of the participants were primary school graduates, 42.2% were high school graduates, 23.4% were 18-30 years old, 42.8% were 31-40 years old, 90.9% were male, and 74.7% were married. In addition, it can be said that 47.4% of the participants have less than 5 years of work experience, and 20.4% have 6-10 years of work experience. When the cases of occupational accidents are examined; 20.9% of the employees stated that they were exposed to occupational accidents. As an evaluation is made according to their fields of activity, it has been revealed that 49.2% of the participants work in the furniture sector, 7.4% in the timber sector, 23.8% in the board and 19.6% in the paper sector.

3.3. Differences in PPE Use Awareness in terms of Demographic Factors

In this section, it was investigated whether the awareness of using PPE differs according to the demographic characteristics of the participants. Demographic features with two sub-variables were evaluated with t-test, and demographic features with more than two sub-variables were evaluated with one-way analysis of variance. While applying the analysis of variance, the homogeneity of the variances was examined, the Anova test and Duncan test were used in cases where homogeneity was achieved, and the Welch test and Dunnett C test were used in cases where homogeneity was not achieved. Table 2 shows the differentiation status of PPE usage awareness according to education level.

Table 2. Differences in PPE usage awareness according to education level.

Scales	Educational Status	Average	Post Hoc	f	p
PPE usage awareness	a) Primary education	3.29	-	0.422	0.737
	b) High school	3.25			
	c) Vocational School	3.20			
	d) University	3.18			

f: Anova test f statistic
p: Significance level (0.05)

As the table is examined, it has been determined that the awareness of using PPE does not differ according to education level ($p>0.05$). However, it is seen that the increase in education level is reflected in the average level of participation in the judiciary, as expected, as a decrease. The reason for this is that the survey questions were asked in a negative way. Table 3 shows the differentiation status of PPE usage awareness according to age level.

Table 3. Differences in PPE usage awareness according to age level.

Scales	Age	Average	Post Hoc	f	p
PPE usage awareness	a) 18-30	3.20	-	0.433	0.730
	b) 31-40	3.28			
	c) 41-50	3.28			
	d) 51-60	3.30			

f: Anova test f statistic
p: Significance level (0.05)

According to Table 3, it was determined that the awareness of using PPE did not differ according to age level ($p>0.05$). However, it was concluded that the increase in the age level also increased the average level of participation in the judiciary, and therefore the awareness decreased. Table 4 shows the differentiation status of PPE usage awareness according to gender.

Table 4. Differences in PPE usage awareness according to gender.

Scales	Gender	Average	t	p
PPE usage awareness	Male	3.26	-0.766	0.451
	Female	3.39		

t:*t*-test statistic
p: Significance level (0.05)

When the table was examined, it was determined that the awareness of using PPE did not differ according to gender (p>0.05). On the other hand, it is seen that male have a higher awareness of using PPE than female. Table 5 shows the differentiation status of PPE usage awareness according to marital status.

Table 5. Differentiation of PPE usage awareness according to marital status.

Scales	Marital status	Average	t	p
PPE usage awareness	Married	3.26	0.582	0.561
	Single	3.22		

t: *t*-test statistic
p: Significance level (0.05)

According to Table 5, it was determined that the awareness of using PPE did not differ according to marital status (p>0.05). Table 6 shows the differentiation status of PPE usage awareness according to total working time.

Table 6. Differences in PPE usage awareness according to total working time.

Scales	Total Working Time	Average	Post Hoc	f	p
PPE usage awareness	Less than 5 years	3.23	-	0.634	0.531
	6-10	3.31			
	11-20	3.28			

f: Anova test f statistic
p: Significance level (0.05)

When the table is examined, it is seen that the awareness of using PPE does not differ according to the total working time (p>0.05). However, the fact that employees with less than 5 years participate in judgments less than other groups reveals that their awareness of using PPE is higher. Table 7 shows the differentiation status of PPE usage awareness according to the status of having a work accident.

Table 7. The differentiation status of PPE usage awareness according to occupational accident status.

Scales	Occupational Accident Situations	Average	t	p
PPE usage awareness	Yes	3.27	0.375	0.708
	No	3.25		

t: *t*-test statistic
p: Significance level (0.05)

As can be seen from the table, the awareness of using PPE does not differ according to the status of having an occupational accident (p>0.05). Table 8 shows the differentiation status of PPE usage awareness according to the field of activity.

Table 8. The differentiation status of PPE usage awareness according to the field of activity.

Scales	Fields of Activity	Average	Post Hoc	f	p
PPE usage awareness	a) Furniture	3.12	a-d c-d b	9.787	0.001
	b) Timber	3.73			
	c) Board	3.35			
	d) Paper	3.30			

f: Anova test f statistic
p: Significance level (0.05)

In Table 8, it is seen that the awareness of using PPE differs according to the field of activity (p<0.05). According to the results of the post Hoc test carried out to determine the source of this differentiation; It has been understood that the furniture sector and the paper sector have similar characteristics and have the highest awareness, while the paper and board sectors have a medium level of awareness. On the other hand, it has been determined that the timber industry is at a much lower level of awareness than other industries.

4. Discussion and Conclusion

In this study, it was investigated whether PPE usage awareness differs at the level of forest products sub-sectors and according to some demographic characteristics. When the results of the study were examined, it was determined that the awareness of using PPE did not differ according to demographic characteristics. This situation can be explained by the fact that all employees have to participate in the same occupational safety trainings. As the literature is examined, it is seen that there are studies with similar results (Çetin and Beğik, 2021; Çalışkan, 2017).

It has been determined that the awareness of PPE usage differs at the level of forest products sub-sectors. As a result of the analyzes made, it was determined that the sector with

the highest PPE awareness is furniture, and the sector with the lowest is timber. It is thought that this difference arises from the management approach and technology at the sectoral level. In today's industrial structure, where the importance of using PPE has reached an indisputable level, it is important that forest products industry employees, who are in the risky and very high-risk groups in many fields, have a higher PPE usage awareness. In this context, more duties fall on the sector, employers, occupational safety experts and employees.

References

Açıkalın, C. (2008). Eskişehir-Bozüyük Bölgesindeki seramik sektöründe iş kazaları ve kişisel koruyucu malzeme kullanımının kazalar üzerindeki etkisi. *Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi, 9*(1), 133-154.

Arslan, V. (2014). "İnşaat sektöründe iş kazalarının medyadaki yansımaları ve analizi". Yüksek Lisans Tezi, Anadolu Üniversitesi, Fen Bilimleri Enstitüsü, Eskişehir.

Çalışkan, H. (2017). Sağlık hizmetlerinde kişisel koruyucu ekipman kullanma davranışını etkileyen faktörler. *Hacettepe Sağlık İdaresi Dergisi, 20*(3), 313-328.

Çetin, S., ve Beğik, V. (2021). İş sağlığı ve güvenliği'nde sürdürülebilir kişisel koruyucu donanım politikalarının uygulanması. *Uluslararası Mühendislik Araştırma ve Geliştirme Dergisi, 13*(1), 202-211.

Çiçek, B. (2016). "Hastanelerde kurum ev idaresi personeli perspektifinden iş sağlığı ve güvenliği uygulamalarının ve güvenlik kültürüne ilişkin algı düzeylerinin belirlenmesi". Yüksek Lisans Tezi, Hacettepe Üniversitesi, Sosyal Bilimler Enstitüsü, Ankara.

Demirbilek, T., ve Çakır, Ö. (2008). Kişisel koruyucu donanım kullanımını etkileyen bireysel ve örgütsel değişkenler. *Dokuz Eylül Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 23*(2), 173-191.

Durdu, A. (2006). "İşçi Sağlığı ve iş güvenliği düzenlemeleri ile ilgili işgörenlerin tutumlarını belirlemeye yönelik bir araştırma". Yüksek Lisans Tezi, İstanbul Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul.

Gök-Uğur, H., Yılmaz-Yavuz, A., Mumcu, N., ve Aydoğan, N. (2020). İşyerlerinde güvenlik iklimi kişisel koruyucu donanım kullanımını etkiler mi?. *MANAS Sosyal Araştırmalar Dergisi, 9*(1), 168-177.

Gülhan, B., İlhan, M.N., & Civil, E.F. (2012). Occupational accidents and affecting factors of metal industry in a factory in Ankara. *Turkish Journal of Public Health, 10*(2), 76-85.

Güngör, E. (2008). "İş sağlığı ve güvenliği kavramlarının toplam kalite yönetimi açısından irdelenmesi ve talaşlı üretim sanayisinde iş sağlığı ve güvenliği üzerine bir araştırma". Yüksek Lisans Tezi, Marmara Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul.

Hendem, B. (2007). "İşçi sağlığı ve iş güvenliğinde kullanılan kişisel koruyucu donanımlar ve standartları". Yüksek Lisans Tezi, Gazi Üniversitesi, Sağlık Bilimleri Enstitüsü, Ankara.

Kahya, E., Haktanırlar Ulutas, B., & Ozkan, N.F. (2018). Analysis of environmental conditions in metal industry. *Journal of Engineering Sciences and Design, 6*(1), 38-46, DOI: 10.21923/jesd.351690

Kalaycı, Ş. (2009). SPSS uygulamalı çok değişkenli istatistik teknikleri. Asil Yayın Dağıtım, Ankara.

Koç, T.S. (2015). "İş sağlığı ve güvenliği uygulamalarının örgütsel güven ve iş tatminine etkisi: Alanya'da konaklama işletmeleri üzerine bir araştırma". Yüksek Lisans Tezi, Akdeniz Üniversitesi, Sosyal Bilimler Enstitüsü, Antalya.

OSHA (2000). Assessing the Need for Personal Protective Equipment: A Guide for Small Business Employers, U. S. Department of Labor Occupational Safety and Health.

Pehlivan, İ. (2016). "İnşaat sektöründe çalışanların iş sağlığı ve güvenliği bilincinin istatistiksel olarak incelenmesi". Yüksek Lisans Tezi, Gedik Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul.

Razgratlı, A. (2016). "İnşaat sektöründe iş kazalarının psikolojik sonuçları". Yüksek Lisans Tezi, Beykent Üniversitesi, Fen Bilimleri Enstitüsü, İstanbul.

Resmi Gazete, (2012). İş Sağlığı ve Güvenliği Kanunu, Başbakanlık Mevzuatı Geliştirme ve Yayın Genel Müdürlüğü (resmigazete.gov.tr)

Resmi Gazete, (2013). Kişisel Koruyucu Donanımların İşyerlerinde Kullanılması Hakkında Yönetmelik, Başbakanlık Mevzuatı Geliştirme ve Yayın Genel Müdürlüğü (resmigazete.gov.tr)

Seyhan, Y. (2009). "Ankara ilinde ağaç işleri sektöründe faaliyet gösteren orta ve büyük ölçekli işletmelerde iş sağlığı ve iş güvenliği üzerine araştırmalar". Yüksek Lisans Tezi, Bartın Üniversitesi, Fen Bilimleri Enstitüsü, Bartın.

Sharma, S. (1996). Applied multivariate techniques. John Wiley and Sons Inc., New York.

Tatlı, H. S. , Eyitmiş, A. M. & Zümrüt, M. (2021). İş Sağlığı ve Güvenliği Uygulamalarının İş Doyumuna Etkisi: Çalışma Yaşamı Kalitesinin Aracılık Rolü . OPUS International Journal of Society Researches, Administration & Organization Special Issue, 1256-1284.

Taşyürek, M. (2007). Kişisel koruyucu donanımlar. Türk Tabipler Birliği Mesleki Sağlık ve Güvenlik Dergisi, 18-26.

Terzi, M. (2013). "İş sağlığı ve güvenliği politikası ile iş tatmini arasındaki ilişkinin belirlenmesi: Ankara Sincan Organize Sanayi Bölgesindeki işletmelere yönelik araştırma". Yüksek Lisans Tezi, Dumlupınar Üniversitesi, Sosyal Bilimler Enstitüsü, Kütahya.

Tiryaki, D. (2011). "İş sağlığı ve güvenliğindeki gelişmeler: Altınova tersaneleri çalışanlarının farkındalıklarının değerlendirilmesi". Yüksek Lisans Tezi, Yalova Üniversitesi, Sosyal Bilimler Enstitüsü, Yalova.

Yeğin, A. (2015). "İş güvenliği kültürünün iş kazalarına etkileri". Yüksek Lisans Tezi, Gedik Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul.