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Investigation of Societal Awareness of Non-Wood Forest Products: A Case Study of Kahramanmaraş, Türkiye

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Abstract

Owing to the diverse biological richness of the forests of Türkiye, non-wood forest products (NWFPs) hold significant potential for sustainable use across the country. In recent years, public interest in NWFPs has increased due to a growing awareness of their role in natural and safe food systems. These products are increasingly recognized as valuable sources of income and employment, contributing significantly to both local and national economies. Moreover, NWFPs are associated with the global rise in demand for organic and sustainable natural products. Although the number of scientific studies on NWFPs has grown, presently, research focusing specifically on public awareness remains limited. This study aims to assess the level of societal awareness regarding NWFPs in the province of Kahramanmaraş. Data were collected via face-to-face surveys with 480 randomly selected participants from various social segments, conducted at different times of the day in the city center. The collected data were analyzed using the SPSS statistical software. The results revealed that 20.6% of participants exhibited low awareness, 77.5% demonstrated moderate awareness, and only 1.9% showed high awareness regarding NWFPs.

Key words

Biodiversity, non-wood forest products, public awareness, natural products, sustainable forest use

Introduction

Forests, which cover approximately 31% of the global land area and 29.8% of Türkiye's territory, play a critical role in fulfilling societal needs for forest products. Beyond timber production, forests provide a wide range of ecological and socio-economic functions, including erosion control, water and soil conservation, biodiversity protection, recreation, rural development, public health support, income generation, export opportunities, employment, and contributions to national added value.

Human societies have always been closely intertwined with forests, benefiting from their resources in various ways (Pak & Berber, 2011). Historically, forests were primarily viewed as sources of wood-based raw materials and associated mostly with rural livelihoods (Türker et al., 2002). However, with rising environmental awareness and global policy developments, this perception has shifted. Today, forests are regarded as complex ecosystems that meet ecological and socio-cultural needs in addition to their economic value.

In line with global trends, forest resources in Türkiye are increasingly recognized as assets relevant to all segments of society. Both the demand for, and expectations from, forest resources have expanded, as have the number of stakeholders with an interest in these resources (Pak & Berber, 2011). This shift, combined with evolving technologies and growing societal needs, has emphasized the importance of non-wood forest products (NWFPs). NWFPs refer to biological products and services derived from forests and adjacent lands, excluding wood. These include non-wood plant products, animal-based products, and various ecological services provided by forest ecosystems (FAO, 1995; Prasad, 1999; Özuğurlu & Düzgün, 2000; Arslan et al., 2016).

In the era of global warming and climate change, forests' functions as carbon sinks and sources of clean bioenergy have gained increasing importance (Türker et al., 2002). At the same time, the rising public focus on food safety

has led to greater demand for natural, chemical-free products. Under these circumstances, NWFPs have emerged as significant components of the organic and natural product markets.

Türkiye possesses a particularly rich diversity of NWFPs, especially plant-based ones, and the utilization of these resources is increasing rapidly. When properly collected and processed, plant-derived NWFPs can significantly contribute to both regional livelihoods and the national economy (Fidan et al., 2003).

Similar to global trends, plant-based NWFPs (NWPFPs) constitute the largest share of NWFPs in Türkiye. As urban and rural populations become increasingly aware of their benefits, the use and market potential of these products have expanded. Therefore, understanding urban consumption patterns of NWFPs is essential for optimizing production and marketing strategies (Korkmaz & Fakir, 2009).

In recent years, awareness and demand for NWFPs have grown steadily. NWFPs are now widely recognized as important sources of income and employment for both local and national economies. Their biological origin lends them the attributes of organic products, further strengthening their role in sustainable forest resource management (Türker et al., 2006).

Parallel to this increased interest, scientific research on NWFPs and NWPFPs has also expanded in Türkiye. Studies have examined production techniques, usage areas, export potential, demand, economic contributions, and the socio-economic aspects of NWFPs (e.g., Bilgin, 1996; Karayılmazlar & Yazıcı, 2002; Özkan et al., 2002; Artukoğlu et al., 2002; Artukoğlu & Uzmay, 2003; Özgüven et al., 2005; Türker et al., 2006; Bayram et al., 2010; Faydaoğlu & Sürücüoğlu, 2011; Altunel, 2012; Kurt et al., 2016; Sarı et al., 2023; Balcı & Köse, 2024). Moreover, studies addressing the challenges in NWFP management—from collection to marketing—have proposed legal, institutional, and administrative solutions (Türker et al., 2001; Türker et al., 2002; Geray & Şafak, 2007; Ok & Tengiz, 2018).

However, research focusing on consumption patterns, consumer attitudes, and especially public awareness levels regarding NWFPs and NWPFPs remains scarce (Korkmaz & Fakir, 2009; Dicle, 2010; Arslan et al., 2016). A review of the literature indicates a clear gap in studies assessing awareness among both rural and urban populations in Türkiye (Atmış, 1999; Pak & Berber, 2011; Kurdoğlu & Düzgüneş, 2011; Yurdakul Erol & Yıldırım, 2017; Birben et al., 2018; Komut, 2019; Birben & Ünal, 2020). This highlights the need to prioritize research focused on societal awareness of NWFPs and NWPFPs.

Accordingly, the present study aims to assess the level of awareness among residents of the Kahramanmaraş city center concerning NWFPs. This study is expected to contribute to the existing literature and serve as a preliminary effort for further research on public perception and awareness related to NWFPs in Türkiye.

Materials and Method

Material

In this study, primary data were obtained through questionnaires administered to participants residing in the city center of Kahramanmaraş. Secondary data sources included previous master's and doctoral theses, peer-reviewed scientific articles, conference proceedings, and institutional statistical records.

Methodology

In this study, a face-to-face questionnaire method was employed to collect data and assess the level of public awareness regarding non-wood forest products (NWFPs). The survey questions were adapted from those used in previous studies on similar topics (Pak & Berber, 2011; Kiper & Öztürk, 2011; Surat et al., 2014). Particular attention was paid to ensuring that the questions were relevant to the research objectives and easily comprehensible for participants from various educational and social backgrounds.

The study population consisted of individuals residing in the city center of Kahramanmaraş, who statistically represented the target group. The sample size was determined using Formula (1), based on a 95% confidence level and a 5% margin of error.

$$n = \frac{Nz^2\ pq}{d^2(N-1) + z^2\ pq} \qquad (1)$$

Here; n is the sample size, N is the population size, z is the z value taken from the normal distribution table according to the specified confidence level (1.96 for 95% confidence level), d is the margin of error (5%), p is the probability of the event occurrence (p=0.5), and q is the probability of non-occurrence (q=0.5). In this study, since there is no idea about the level of awareness of the society about NWFPs, p and q ratios were taken as 0.50 (Yavuz, 2000; Baş, 2010).

According to the Address-Based Population Registration System, the population of Kahramanmaraş city center in 2024 was recorded as 558,664 individuals. Based on this population, the required sample size was calculated as

384 individuals. To enhance the reliability of the findings and minimize sampling error, the sample size was increased by 25%, and surveys were conducted with a total of 480 participants.

The fieldwork took place between May 9 and July 12, 2016. Participants were selected through a random sampling method. To ensure that the sample was representative of the city center population, surveys were carried out at various locations and times throughout the day. Particular attention was paid to securing voluntary participation and encouraging respondents to provide honest answers without external influence. The surveys were administered by trained forest engineers who had prior experience with data collection and subject-matter knowledge. Prior to completing the questionnaire, participants were given a brief explanation of NWFPs, specifically defined as plant-based products naturally growing in forest ecosystems.

Upon completion, all questionnaire responses were digitized using IBM SPSS statistical software. Data were entered into the program in compliance with SPSS formatting requirements. To prevent any inconsistencies, each survey form was assigned a unique identification number. Moreover, to minimize the risk of human error during data entry, the process was carried out independently by two different users on two separate computers.

Descriptive statistics, including frequency analyses, were conducted to evaluate the demographic characteristics of the participants, such as gender, education level, income, occupation, and age group. Additionally, responses to awareness-related questions were analyzed using frequency and percentage distributions. The awareness levels of participants regarding NWFPs were assessed using a scoring system outlined in Table 1.

Table 1. Scoring Schedule for Level of Awareness

	Questions	**Strongly Disagree**	**Disagree**	**No opinion**	**A Agree**	**Strongly agree**
1	GDF's (General Directorate of Forestry) activities related to NWFPs are sufficient	2	1	0	0	0
2	NWFPs are an important source of income for forest villagers.	0	0	0	1	2
3	Kahramanmaraş forests have rich resources in terms of NWFPs.	0	0	0	1	2
4	NWFPs increase public interest in forests.	0	0	0	1	2
5	I think that NWFPs are unhealthy products.	2	1	0	0	0
6	NWFPs are certified by any institution.	0	0	0	1	2
7	There is insufficient information about NWFPs.	2	1	0	0	0
8	I have sufficient knowledge about the purpose and method of use of the NWFPs..	0	0	0	1	2
9	NWFPs are used as active ingredients in sectors such as cosmetics, medicine, food, etc.	0	0	0	1	2
10	I would like to receive training on NWFPs	0	0	0	1	2
11	If government incentives are provided for the production of NWFPs, I would like to produce them.	0	0	0	1	2
12	The market area and sales conditions of the NWFPs are not sufficient.	2	1	0	0	0
13	The principles of production and sales of NWFPs should be under state control.	0	0	0	1	2
14	There is a need to increase the amount of production of NWFPs.	0	0	0	1	2
15	I follow the activities carried out by GDF on NWFPs.	0	0	0	1	2
16	I have difficulties in reaching NWFPs.	2	1	0	0	0
17	I think that the price of NWFPs is high.	2	1	0	0	0
18	The number of technical staff working in GDF related to NWFPs should be increased.	0	0	0	1	2
19	The production and marketing of NWFPs should be carried out by a private company.	2	1	0	0	0
20	Non-governmental organizations should be established to carry out awareness-raising activities related to NWFPs.	0	0	0	1	2

In order to determine the level of awareness, the answers given by the participants to the propositions were scored. In order to increase the level of people's perception of NWFPs, 2 points were given to answers that included a definite statement and 1 point was given in the other case. No points were given to answers that did not express an opinion and were negative. According to the scoring, the highest score that the participants can get is 40 and the lowest score is 0 (zero). The level of awareness of the participants was categorized into three categories: low, medium and high. Scores determining the level of awareness of the respondents about the NWFPs were created. The ranges of these scores are shown in Figure 1.

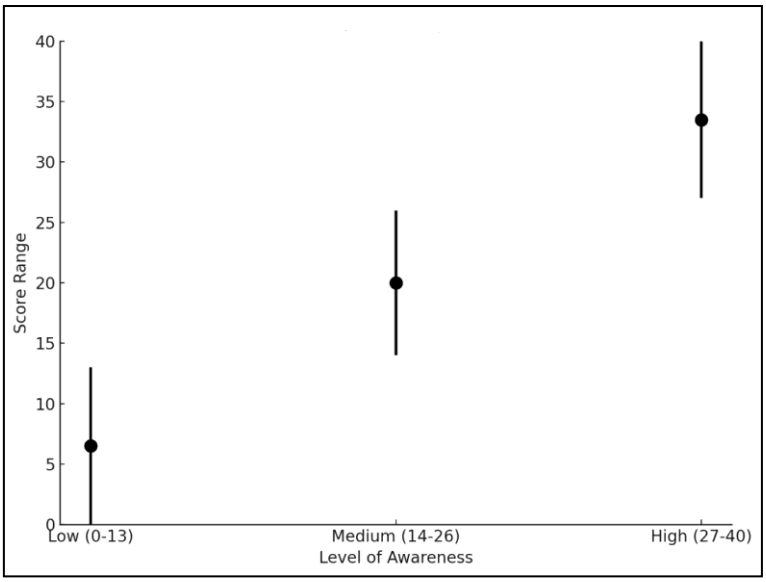


Figure 1. Score Ranges by Awareness Level

In addition, descriptive and inferential statistical analyses, including crosstabulation (crosstab) analysis and the Chi-Square test of independence, were employed to examine the relationship between participants' awareness levels and the variables of gender, age, education level, income, and occupational group.

Results and Discussion

Socio Economic Characteristics of Participants

Data on the gender, age, educational level, monthly income and occupation of the respondents are presented in Figure 2.

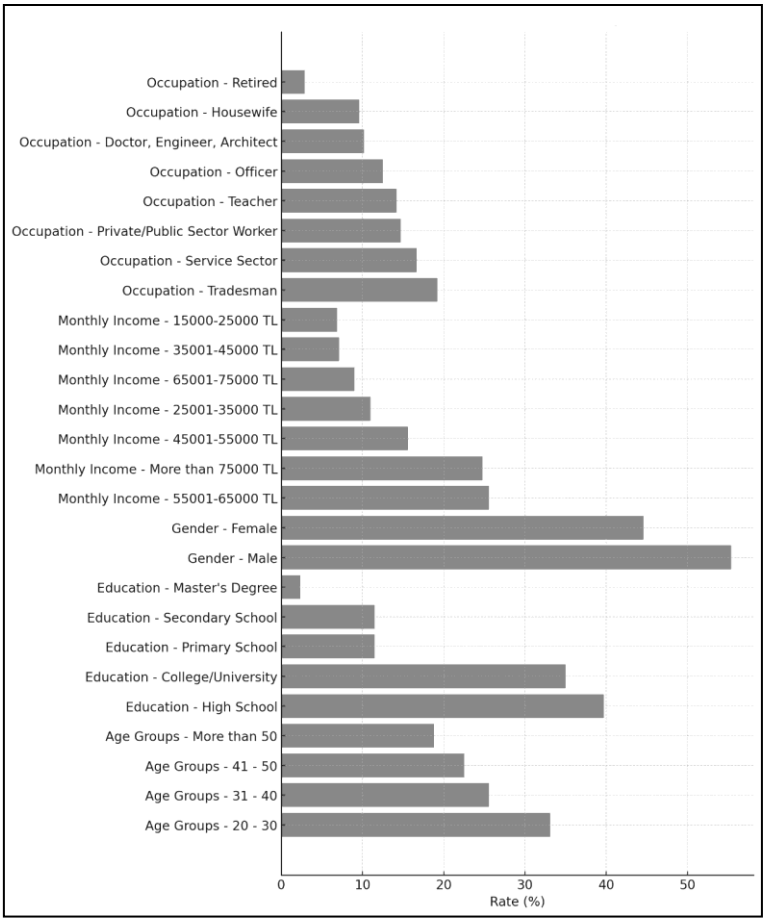


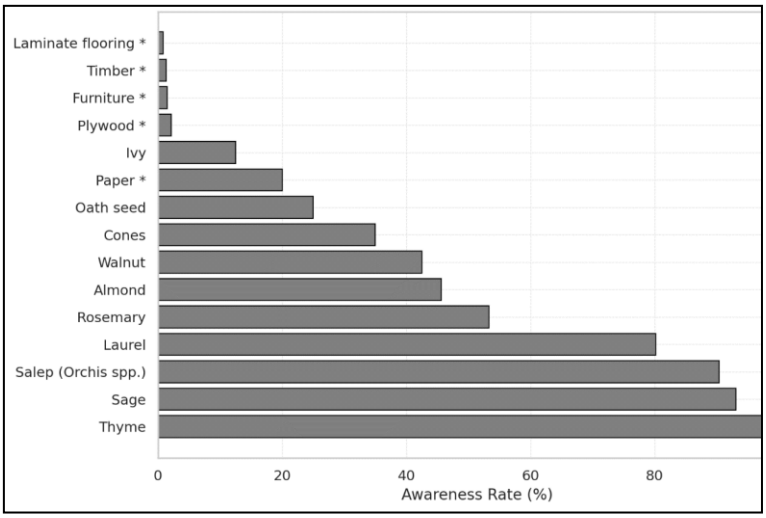
Figure 2. Socio-Economic Characteristics of the Respondents

An examination of Figure 2 reveals that a greater proportion of survey respondents were male (55.4%), indicating higher participation among men. The majority of participants fell within the 20–30 age range (33.1%), suggesting that younger individuals were more likely to engage in the survey. Regarding educational background, most respondents were either high school graduates (39.7%) or college/university graduates (35.0%), reflecting a relatively educated sample group.

Income distribution data show that 76% of participants reported a monthly income of 45,001 TL or higher, indicating a predominance of middle- to high-income individuals among respondents. Participants represented a wide array of occupational groups within society. When retirees are excluded, occupational categories appear to be relatively evenly distributed. However, it is noteworthy that tradespeople (19.2%) exhibited a higher rate of participation compared to other professional groups.

Awareness of Non-Wood Forest Products

To determine which products participants recognized as NWFPs, they were presented with a list and asked to mark all the items they had heard of, were familiar with, or had used. Participants were informed that they could select multiple options. The results of this question are summarized in Figure 3.



**It is not a non-wood forest product.*

Figure 3. Awareness Rate of Respondents' Non-Wood Forest Products

The products listed in Figure 3 were selected a total of 2,886 times by the participants. Among these selections, it was determined that 123 choices (4.2%) were not actually classified as NWFPs. In a related study conducted by Cömert and Dinç (2014), a survey was administered to 285 students to examine their awareness of medicinal plants. The most commonly recognized plants in that study were blackberry (98.2%), thyme (97.9%), and almond (96.8%).

In the present study, the most well-known NWFPs among participants were found to be thyme (97.9%), sage (93.1%), and salep (90.4%). The results differ from those of Cömert and Dinç (2014), which is likely due to regional variation in both the availability and distribution of plant species, as well as the differing demographic and geographic characteristics of the study populations.

Awareness Level of Non-Wood Forest Products

Participants were categorized into three groups—low, moderate, and high—based on their awareness score ranges. Data related to participants' awareness levels regarding NWFPs are presented in Table 2.

Table 2. Distribution of Participants' Awareness Levels

Awareness Level	Frequency (n)	Rate (%)
Low	99	20.6
Medium	372	77.5
High	9	1.9
Total	480	100.0

An analysis of Table 2 shows that 20.6% of the participants had a low level of awareness, 77.5% had a moderate level, and only 1.9% demonstrated a high level of awareness regarding NWFPs. As seen in the table, the majority of respondents exhibited a moderate awareness level.

These findings align partially with those of Atmış (1999), who noted that a large portion of society is generally informed about forest services. However, Yaldız et al. (2010) reported that public awareness of NWFPs remains

low and requires improvement. In contrast, the study conducted by Pak and Berber (2011) in Eskişehir found that 70.4% of respondents had a high awareness level, while 25.8% were at a moderate level—a result that differs significantly from the present study.

Yurdakul Erol and Yıldırım (2017) highlighted the influence of socioeconomic factors on the spatial distribution of forest functions, implying a potential link between awareness and regional forest use. Similarly, Birben et al. (2018), in their study on public perception of forest resources in Çankırı city center, observed that while the public holds a general appreciation for forests, specific knowledge regarding their functions and benefits remains limited. Komut (2019) further emphasized that decreased utilization of forest resources corresponds with reduced public awareness.

In light of these findings, it can be concluded that while some aspects of the present study align with previous literature, regional and socioeconomic differences may account for the observed variations in awareness levels.

Distribution of Awareness Level According to Socio-Economic Characteristics of Participants

The crosstabulation analysis and Chi-Square test of independence were conducted to examine whether participants' awareness levels regarding NWFPs differed significantly based on their gender, age, education level, and income. The results of these analyses are presented in the following sections. Specifically, the data related to whether participants' awareness levels differ by gender are presented in Table 3.

Table 3. Distribution of Awareness Level of Participants by Age Groups

			Level of Awareness			
			Low	**Medium**	**High**	**Total**
Gender	Male	Frequency	38	223	5	266
		Gender ratio of respondents (%)	14.3	83.8	1.9	100.0
	Female	Frequency	61	149	4	214
		Gender ratio of respondents (%)	28.5	69.6	1.9	100.0
Total		Frequency	99	372	9	480
		Gender ratio of respondents (%)	20.6	77.5	1.9	100.0

An examination of Table 3 reveals that among male participants, 1.9% had a high level of awareness, 83.8% had a moderate level, and 14.3% had a low level of awareness. Among female participants, 1.9% also had a high level of awareness; however, 69.6% had a moderate level, and 28.5% had a low level of awareness.

According to the results of the Chi-Square test of independence, there was a statistically significant difference in NWFP awareness levels based on gender ($p = 0.001 < \alpha = 0.05$), with male participants exhibiting significantly higher awareness levels than female participants.

These findings are consistent with the results of Pak and Berber (2011), who found a statistically significant relationship between gender and awareness of forest functions in their study conducted in Eskişehir. Similarly, Birben and Ünal (2020) reported a significant association between gender and perceptions of forests' role in providing NWFPs in their study on urban residents in Ankara.

The alignment of the present study with previous research suggests that gender plays a notable role in shaping NWFP awareness. One possible explanation for this disparity may be the higher reading and information-seeking rates among men in Türkiye, which could contribute to their relatively higher levels of awareness regarding NWFPs. The data regarding whether participants' awareness levels differ by age group are presented in Table 4.

Table 4. Distribution of Awareness Level of Participants by Age Groups

			Level of Awareness			
			Low	**Medium**	**High**	**Total**
Age Groups	20-30	Frequency	31	124	4	159
		Rate of respondents' age (%)	19.5	78.0	2.5	100.0
	31-40	Frequency	27	93	3	123
		Rate of respondents' age (%)	22.0	75.6	2.4	100.0
	41-50	Frequency	31	76	1	108
		Rate of respondents' age (%)	28.7	70.4	0.9	100.0
	> 51	Frequency	10	79	1	90
		Rate of respondents' age (%)	11.1	87.8	1.1	100.0
Total		Frequency	99	372	9	480
		Rate of respondents' age (%)	20.6	77.5	1.9	100.0

An analysis of Table 4 indicates that the highest proportion of participants exhibiting a high level of awareness regarding NWFPs was observed in the 51 and above age group (88.9%), followed by the 20–30 age group (80.5%), and the 31–40 age group (78.0%), respectively.

Despite these numerical differences, the results of the Chi-Square test of independence revealed that the variation in awareness levels across age groups was not statistically significant ($p = 0.091 > \alpha = 0.05$). This finding corroborates the results of Pak and Berber (2011), who reported that awareness levels related to forest services did not significantly vary by age group.

Conversely, the findings of Birben and Ünal (2020) suggest that awareness of forest functions and the ways in which individuals interact with forest resources do vary by age. Their study demonstrated that younger participants (aged 16–25 and 26–40) were more aware of functions such as biodiversity conservation, climate regulation, public health enhancement, and the protection of cultural and local values. In contrast, the 41–60 age group displayed greater awareness of forest-related services including global climate mitigation, water purification, erosion control, natural nutrition, air quality improvement, support for urban life, and employment opportunities in rural areas.

Furthermore, earlier studies by Atmış (1999) and Kurdoğlu and Düzgüneş (2011) indicated that younger age groups tend to show more pronounced interest in forest services. The findings of the present study appear to diverge from those earlier studies, as the statistical analysis did not reveal significant age-related differences in NWFPs awareness. Nevertheless, when considered in the context of Birben and Ünal (2020), these findings suggest that although the content and nature of awareness may differ across age groups, such differences do not necessarily manifest as statistically significant variations in overall awareness levels.

Subsequently, the analysis of whether participants' NWFP awareness levels differ significantly according to educational attainment is presented in Table 5.

Table 5. Distribution of Awareness Level by Participants' Educational Status

			Level of Awareness			
			Low	**Medium**	**High**	**Total**
Education Status	Primary School	Frequency	9	45	1	55
		Rate in education (%)	16.4	81.8	1.8	100.0
	Secondary School	Frequency	8	47	0	55
		Rate in education (%)	14.5	85.5	0.0	100.0
	High School	Frequency	50	138	3	191
		Rate in education (%)	26.2	72.3	1.6	100.0
	College/University	Frequency	31	134	3	168
		Rate in education (%)	18.5	79.8	1.8	100.0
	Master's Degree	Frequency	1	8	2	11
		Rate in education (%)	9.1	72.7	18.2	100.0
Total		Frequency	99	372	9	480
		Rate in education (%)	20.6	77.5	1.9	100.0

An examination of Table 5 reveals that the highest proportion of participants demonstrating a high level of awareness regarding NWFPs consisted of those holding a master's degree (18%). In contrast, participants with only primary, secondary, or high school education represented a significantly larger share of the low-awareness group (57.1%), whereas college/university and master's degree graduates constituted 27.6% of this group.

The results of the Chi-Square test of independence confirmed a statistically significant association between educational attainment and NWFP awareness levels ($p = 0.03 < \alpha = 0.05$). These findings suggest a positive correlation between the level of formal education and the degree of awareness of NWFPs. As participants' educational levels increased, their awareness of the ecological, economic, and health-related benefits of NWFPs also tended to rise. This may be attributed to the broader environmental awareness, increased access to information, and stronger orientation toward health-conscious consumption patterns observed among individuals with higher educational qualifications.

These results are consistent with the findings of Birben and Ünal (2020), who reported a statistically significant relationship between educational level and both the general functions of forests and the specific role of forests in providing NWFPs. Similarly, Pak and Berber (2011) concluded that environmental awareness tends to increase proportionally with educational attainment.

The present findings, therefore, align closely with the aforementioned studies, reinforcing the proposition that educational background plays a critical role in shaping individuals' awareness and valuation of forest-based resources. However, these results diverge from those reported by Vaizoğlu et al. (2005), Erol and Gezer (2006), and Atmış (1999), in which no statistically significant relationship was identified between educational level and environmental or NWFPs-related awareness. Such discrepancies may stem from differences in regional focus, survey methodologies, sample characteristics, or temporal contexts across the studies.

The subsequent section presents the analysis of whether participants' levels of awareness regarding NWFPs vary significantly by income group, as detailed in Table 6.

Table 6. Distribution of Awareness Level by Participants' Income

			Level of Awareness			
			Low	**Medium**	**High**	**Total**
Income Groups	15000 - 25000 TL	Frequency	6	27	0	33
		Rate of household monthly income (%)	18.2	81.8	0.0	100.0
	25001 - 35000 TL	Frequency	5	48	0	53
		Rate of household monthly income (%)	9.4	90.6	0.0	100.0
	35001 - 45000 TL	Frequency	6	28	0	34
		Rate of household monthly income (%)	17.6	82.4	0.0	100.0
	45001 - 55000 TL	Frequency	21	53	1	75
		Rate of household monthly income (%)	28.0	70.7	1.3	100.0
	55001 - 65000 TL	Frequency	25	96	2	123
		Rate of household monthly income (%)	20.3	78.0	1.6	100.0
	65001 - 75000 TL	Frequency	11	30	2	43
		Rate of household monthly income (%)	25.6	69.8	4.7	100.0
	> 75001 TL	Frequency	25	90	4	119
		Rate of household monthly income (%)	21.0	75.6	3.4	100.0
Total		Frequency	99	372	9	480
		Rate of household monthly income (%)	20.6	77.5	1.9	100.0

An analysis of Table 6 indicates that participants with a monthly income between 25,001–35,000 TL exhibited the highest proportion of moderate awareness regarding NWFPs, at 90.6%. This group was followed by participants in the 35,001–45,000 TL income bracket (82.4%) and those in the 55,001–65,000 TL range (78.0%), respectively.

Despite these observed differences in awareness distribution across income categories, the results of the Chi-Square test of independence revealed no statistically significant relationship between income level and NWFP awareness ($p = 0.318 > \alpha = 0.05$). In other words, variations in participants' income levels did not correspond to meaningful differences in their awareness of NWFPs.

This finding contrasts with the results reported by Pak and Berber (2011), who found a significant association between income and environmental awareness. Conversely, it aligns with the findings of Gürbüz et al. (2011), who concluded that income level does not significantly influence individuals' environmental behavior, knowledge, attitudes, or perceptions. Similarly, Kızılaslan and Kızılaslan (2005) observed that income had limited impact on environmental awareness levels.

Taken together, the findings of the present study reinforce the argument that income level alone is not a determining factor in shaping awareness of forest-related resources. Rather, other variables such as education, cultural context, and exposure to environmental information may play more decisive roles in influencing NWFP awareness.

Conclusion and Recommendations

Throughout history, humanity has maintained a close and dynamic relationship with forest ecosystems, deriving a wide range of ecological, economic, and cultural benefits from them. This interaction persists today and is expected to intensify in the future, especially as societal demands for forest resources continue to increase. These growing expectations inevitably place significant pressure on forest ecosystems. Accordingly, understanding the level of public awareness regarding forest resources—particularly NWFPs—is essential for informing sustainable policy development and rational resource management strategies. Individuals with a high level of awareness can play a critical role in shaping and supporting the effective governance of NWFPs.

In the present study, 55.4% of the survey participants were male, while 44.6% were female, with an average age of 38 years. Notably, younger individuals appeared more inclined to participate in the research. Regarding educational attainment, 74.7% of participants were either high school or university graduates. In terms of income, approximately 60% of respondents reported a monthly income of 55,000 TL or above. These demographics suggest that the study sample predominantly consisted of individuals with relatively high education and income levels.

The findings revealed that the majority of respondents (77.5%) exhibited a moderate level of awareness regarding NWFPs. This moderate awareness level may be attributed to participants' partial familiarity with NWFPs; while they may recognize certain products, they often lack clarity on whether these products fall within the formal definition of NWFPs. This partial knowledge base may hinder the formation of a high-level awareness. Consequently, there is a critical need to strengthen public information and awareness campaigns, particularly by institutions and organizations addressing environmental issues such as climate change and global warming.

In an era marked by advanced communication technologies, it is imperative to utilize both traditional and digital media platforms including social media channels (e.g., Facebook, Instagram, X) and print media—to disseminate accurate information about forest ecosystems and their associated products. In this context, awareness campaigns, public service announcements, and strategic communication efforts led by the General Directorate of Forestry (GDF) and its affiliated bodies are of great importance.

An essential aspect of this study was to assess whether NWFP awareness varied significantly based on key sociodemographic variables. The results demonstrated that male participants had a significantly higher awareness level than female participants. This may be partly explained by the persistent gender gap in educational attainment in Türkiye, where men generally have higher access to education and information sources. On the other hand, no statistically significant differences were found between awareness levels and participants' age or income groups. However, a significant and expected correlation was identified between education level and awareness, with participants holding a master's degree exhibiting the highest level of awareness. This result confirms the established understanding that education is a fundamental determinant of environmental awareness.

The overall findings indicate that residents of the Kahramanmaraş city center possess a moderate level of awareness regarding NWFPs. Despite increasing academic and institutional focus on NWFPs in recent years, urban populations have largely been excluded from these initiatives. Consequently, NWFPs are often conflated with medicinal or aromatic plants, and their connection to forest ecosystems is largely overlooked. To bridge this conceptual gap, targeted awareness-raising activities including social media outreach, public seminars, and periodic conferences organized by the GDF and other forestry institutions should be prioritized. These efforts will help strengthen the association between NWFPs and the discipline of forestry in the public mind.

In parallel with increasing concerns about global environmental issues and growing demands for food safety, NWFPs are increasingly viewed as valuable components of both local and national economies. The integration of non-formal and formal education activities, supported by public and private sector initiatives, has contributed to a gradual increase in awareness levels. These developments signal the emergence of an ecosystem-based forestry paradigm in Türkiye.

To further advance the NWFPs sector, it is imperative that companies involved in the processing of NWFPs enhance their research and development (R&D) capabilities. Through the use of modern processing techniques, these enterprises should aim to introduce diversified, value-added products that align with market demands. Furthermore, establishing effective coordination among public institutions, private enterprises, and civil society is critical to ensuring that research findings are translated into practical applications. This collaborative approach can significantly accelerate progress in the NWFPs sector, reducing inefficiencies and preventing the unnecessary expenditure of time, labor, capital, and natural resources.

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Author Contributions

Pak, M. was responsible for selecting the research topic, designing and executing the study, and drafting the initial version of the manuscript. Bilir, A. conducted the fieldwork, performed statistical analyses, and contributed to data interpretation. Okumuş, A. contributed to the interpretation and analysis of the data and assisted in drafting the manuscript. All authors discussed the findings collectively and contributed to the final version of the manuscript.

Conflict and Interest

The authors declare that they have no conflict of interest.

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