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Women as Environmental Protectors: A Case Study on Cross-Generational Stewardship in Hunza

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ABSTRACT

Environmental protection has become a global concern, requiring collective action and innovative solutions. Women are increasingly recognized for their contributions to environmental sustainability. A qualitative research design was implemented, focusing on a family unit as the case study. A total of 16 participants, eight from the younger generation and eight from the elder generation, were involved in in-depth interviews using a purposive sampling technique. The Objectives of the study are to explore the awareness and knowledge of environmental protection, explore their household management in environmental protection, examine their communal activities to save the environment, and explore the transmission across generations. Thematic analysis was conducted, revealing that elderly women often lack awareness and knowledge regarding environmental issues. However, their traditional practices significantly contribute to environmental protection. On the other hand, some of these practices, due to the lack of awareness and resources, have also had negative impacts on the environment. Younger individuals generally have a better understanding of environmental protection. However, reliance on technology has also led to practices that contribute to pollution. Beyond household efforts, women play an active role in community events, participate in local organizations, and lead workshops and awareness campaigns focused on protecting the environment. Environmental knowledge is passed down through generations, creating a reciprocal exchange through storytelling, experiences, and formal education. This study highlights the significant contributions of women to environmental protection. Policymakers should create specific policies that support and enhance the role of women in environmental management. Additionally, it is recommended to conduct more quantitative research to better understand the knowledge and practices of women in environmental protection and to further emphasize their critical contributions.

INTRODUCTION

In the context of environmental sustainability, women's contributions to environmental protection are increasingly being acknowledged, particularly in areas where traditional knowledge and practices hurt the environment; thus, women make a significant contribution to environmental preservation and sustainability (Ahmad, Ahmed, Riaz, & Yang, 2024). A report by the World Wildlife Fund indicates that environmental protection has gained significance in today's society. Human actions are exerting an unprecedented level of strain on the ecosystem due

to rapid industrial growth and technological advancements. According to a report about Climate Change, there is a 95% likelihood that human actions over the last half-century have contributed to global warming (A. Khan & Ullah, 2024). Climate change is a pressing issue that society is currently facing. Despite the crucial role women play, particularly in rural communities, they frequently find themselves excluded from decisions regarding environmental management. Combining environmental stewardship with gender equality not only improves conservation and ecological

restoration initiatives but also opens doors for inclusive growth (Abhilash, 2021)

Since adaptation and mitigation are fundamentally gendered, and women may view and react to climate change differently than men, gender is crucial in global climate change solutions (Arya & Shukla, 2025). Women can support environmental conservation and climate change mitigation initiatives by raising family members' understanding of environmental issues because they are the primary managers of the home (Fertő & Bojnec, 2024). They are the main consumers of natural resources (land, forests, and water) in developing nations because they are the ones who are in charge of obtaining food, fuel, and feed. They spend most of their time working on farms to provide for their families. By taking on this duty, they learn more about plants, trees, and soil and learn how to use them responsibly (Graafland, 2020).

Therefore, they frequently manage households and natural resources in many Indonesian rural areas, making a major contribution to regional sustainability initiatives. These roles are frequently underappreciated. But environmental actions can become more inclusive and effective when women are empowered (Koralagama, Gupta, & Pouw, 2017). In regions like Hunza, women have taken the initiative in utilizing natural resources responsibly and adhering to traditional practices that contribute to ecological preservation (Zafarullah et al. 2024).

Climate change has become a significant challenge, especially for areas like Gilgit-Baltistan that are strategically important and ecologically vulnerable (Abbas & Maqbool, 2025). The effects of climate change are numerous and profound, affecting various aspects of society, such as the economy, health, biodiversity, and forests. However, it is generally noted that the agriculture sector is mostly affected by climate change (I. Ali, Shah, Alotaibi, & Ali, 2024). Climate change has an impact on both the biotic and abiotic elements of ecosystems are significantly impacted by human activity. All living things are seriously threatened by pollution, which is defined as the release of toxic compounds into the environment (Saxena, 2025).

In recent years, the country has faced floods, droughts, and heavy rains. Pakistan has approximately 7,000 glaciers, which are melting

daily due to global warming. Interest in women's role in the environment emerged in the early 1970s (Khoso, Jintu, Bhutto, Sheikh, & Narejo, 2024). Nature has long been associated with women. Earth is often referred to as "Mother Earth" in a symbolic sense and is thought to possess a feminine quality. Since environmental conservation became a global issue in 1970, efforts have increased. As technology advances, maintaining ecological sustainability becomes more difficult. Therefore, he argues that decision-making and resource sharing need equal participation from both men and women (Mukhtar, 2023). In Hunza, a majority of women participate in agriculture. They gather crops, pick fruits, and tend to the plants. Women are frequently seen laboring in the agriculture sector. Working women help provide for their families and motivate others to engage in community activities. Men and women equally participate in all social events (E. N. Ali, Baig, & Parveen, 2024).

Women play a crucial role in protecting the environment, particularly in rural areas, where they are deeply connected to nature through their daily activities (Antriyandarti, Suprihatin, Pangesti, & Samputra, 2024). However, their contributions are often overlooked and not well-documented. In places like Shimshal and Hunza, where the environment is deeply intertwined with people's lives, it is essential to understand how women contribute to protecting natural resources. There is a need to study what women know about environmental protection, how they practice it in their homes and communities, and how this knowledge and care for the environment are passed from one generation to the next (Zahid, Maqsood, Irshad, & Khan, 2025).

Although some studies have discussed women and the environment (Mansour et al., 2024), very few have focused on the cross-generational transmission of environmental knowledge and practices, particularly in remote areas such as Shimshal, Hunza. This study fills the gap by combining both aspects of learning and practices and by exploring how environmental responsibility is shared and taught between older and younger women in the community.

This Study seeks to understand how women's knowledge, household practices, and communal roles contribute to environmental protection. A key objective is to explore how environmental

knowledge and practices are passed down from one generation to the next, highlighting the bilateral and evolving nature of cross-generational ecological stewardship.

The significance of this study lies in emphasizing the role of women in environmental protection and sustainability. Women frequently manage natural resources daily, such as water, food, and fuel. They are often at the forefront of grassroots movements and advocacy efforts, leading protests, demonstrations, and lobbying to promote environmental goals. They play a vital role in educating communities about the importance of environmental protection and biodiversity conservation. Additionally, this research will enable us to take further steps to address climate change within the community by emphasizing the contributions of women. The focus of the study will be on the roles women play that can facilitate the enactment of more effective community-based climate change management strategies. Engaging women in climate initiatives can result in more inclusive and efficient environmental management practices. The importance of gender equality in reaching sustainable development goals will be underscored to motivate women's participation in environmental endeavors. Furthermore, the study will aid in achieving Sustainable Development Goals 12 (Responsible Consumption and Production) and 13 (Climate Action), which emphasize sustainable methods of production and consumption, along with climate initiatives.

MATERIALS AND METHODS

The methodology used in this study was a qualitative case study. Participants had the opportunity to share their knowledge, understanding, and practices on environmental degradation and conservation through in-depth interviews. As a result, the family unit was the researcher's main case study. The study was conducted at Shimshal, Hunza. Shimshal is located in northern Pakistan's upper Hunza area. Women play an important part in environmental conservation initiatives in this area. To enhance clarity and cultural relevance, the interviews were conducted in the Wakhi language, which is spoken by the community.

A purposive sampling method was employed to select participants for an in-depth examination of

a specific phenomenon. A total of 20 participants were selected, comprising 10 women from the older generation, aged 50 to 70 years, and 10 from the younger generation, aged 18 to 25 years. The sample included mothers, grandmothers, and daughters.

To facilitate the data collection process, a meticulously crafted interview guide was developed. The interview guide underwent a pilot test. The objective was to understand the perspectives of women from various age groups regarding their understanding and practices regarding environmental safety. This interview protocol was employed to gather extensive data. Interviews were conducted through WhatsApp calls and in-person meetings. The researcher highlighted important points and recorded the conversations with the participants' consent.

To analyze the results, thematic analysis was used. The six-step process established by Braun and Clarke was followed. In the initial step, the researcher became familiar with the data by transcribing it. The second step involved the creation of initial codes. In the third step, the researcher identified themes by organizing related codes and examining connections between them. The fourth step entailed reviewing the themes to confirm their accuracy. Subsequently, in the fifth step, the themes were named. Lastly, in the sixth step, a report was generated that contextualized and interpreted the themes in relation to the research objectives, existing literature, and the lived experiences of women in Shimshal. This structured approach enabled the researcher to reveal the depth and richness of women's roles as environmental stewards, as well as the intergenerational dynamics of transmitting environmental knowledge.

RESULTS AND DISCUSSION

Understanding of Environmental Protection and Degradation

During the interview, older participants shared their insights on environmental protection and degradation, mentioning that previously they had limited knowledge and awareness about how their actions affected the environment. The majority of participants indicated that in the past, they burned plastic and felled plants for fuel and accommodation due to a lack of alternative resources.

A housewife, representing the older generation, expressed her profound relationship with nature that has been cultivated over many years. She mentioned, "Previously, our lifestyle was quite uncomplicated. We relied on traditional methods to handle resources, create our own products, store food, and appreciate the resources without causing harm to the environment".

The participants expressed similar views, emphasizing that younger generations possess greater awareness regarding environmental protection and degradation. They said that human activity is the reason for contamination, and it's important to protect the environment. Furthermore, they highlighted the significant impact of our daily household practices on the environment.

Other participants, a university graduate and an active member of her community, stated that, "We each have a significant part to play in safeguarding the environment. Every small action we take can lead to a substantial effect. By engaging in sustainable practices and developing eco-friendly habits, we can make a difference. Personal accountability serves as the foundation for collective efforts".

The researcher observed that elders do not possess greater knowledge or awareness about their actions related to environmental conservation. However, their customary practices consistently aid in environmental protection. In traditional communities, lifestyles were straightforward; people lived in harmony, appreciated resources, and positively influenced the environment. Additionally, their unintentional daily habits, stemming from a lack of awareness, significantly affect the environment.

Today, climate change is viewed as a major global issue. Younger generations significantly influence both the protection and deterioration of the environment. With increased contact with innovative solutions, they are actively contributing to safeguarding the environment. These youths are more aware of the consequences of their actions and have a strong understanding of climate change and related problems. They have adopted environmentally friendly habits and participate in several eco-friendly initiatives. However, due to industrialization, they are also dependent on technology, which can lead to practices that further pollute the environment.

Sources of Knowledge

Studies show that education is essential for advancing environmental sustainability. Preventing environmental degradation and involving women in sustainable practices requires knowledge in sustainable development (Maniatis, 2024). Questions were asked of the participants about where they acquired their knowledge regarding environmental protection. They expressed that their understanding and awareness stem from local traditions, community gatherings, and various media platforms.

A 24-year-old participant from the younger generation emphasized how her understanding of environmental protection is influenced by various sources. "I learn traditional knowledge and gain insights into environmental preservation from my seniors. They shared their stories and practices related to crop cultivation, resource management, and environmental conservation. I notice and learn from them".

Eco-feminism emphasizes the relationship of women with the natural world. Women, particularly those in rural areas, possess a profound relationship with the environment and offer distinct viewpoints related to environmental conservation and decline. Their daily tasks, such as farming, agricultural practices, and water management, reflect their heightened concern for the environment, and their traditional knowledge serves to link them closely to nature (Maduekwe, Egeruoh-Adindu, Okparavero, & Anozie, 2025).

The understanding of rural women is shaped by their practices, as they are the main protectors and leaders of natural resources. Research indicates that traditional knowledge plays a crucial role in both environmental conservation and harm. It has been shown that traditional knowledge is more significant and plays a greater part in promoting sustainable practices (Lin, Gu, Gillani, & Fahlevi, 2024).

The researcher observed that elderly women acquire environmental knowledge from one another. The majority of participants indicated that they learn about environment-related awareness from the elders and conventional practices within their societies. The indigenous wisdom assists them in safeguarding the environment. Additionally, they hold cultural festivals where all members of the community gather to encourage sustainable

activities and discuss methods of environmental protection and degradation. Some participants pointed out that they get updated on environmental issues through social media. They stated that they pay full attention to the updates, connecting them to environmental issues, and that the media channels play a crucial role in keeping them informed about climate change.

A participant from the younger generation, a 26-year-old woman from Shimshal with a strong interest in environmental issues, highlighted the importance of digital platforms in enhancing her environmental awareness. As an active social media user and self-learner, she uses online resources to stay informed about both global and local environmental challenges. She shared, "I use social media platforms to engage with environmental topics and stay updated on various environmental challenges. I also watch YouTube and documentary videos focused on these issues. This has deepened my understanding of environmental protection and highlighted the significance of safeguarding our environment".

Media platforms are crucial for increasing awareness. Social media provides people with a global connection and keeps them informed about the challenges and implications of climate change on people's daily lives. The platforms motivate people to take part in environmental projects and express their opinions to tackle climate change (Nguyen, Grote, Neubacher, Do, & Paudel, 2023). The researcher found that social media platforms are a source of knowledge for women. Social media channels are particularly used by the younger generation to learn about environmental degradation and protection. They are environmental activists and leaders of campaigns who work to raise awareness of environmental issues and encourage sustainability.

Green Practices in Household Management for Environmental Protection and Sustainability

According to recent studies, women's role in environmental conservation and sustainable development has been highlighted more and more. This is particularly relevant in rural areas, where women's direct involvement with natural resources and family responsibilities has significant effects on environmental and economic sustainability. Encouraging rural women has been recognized as a key role for attaining sustainable development and

environmental preservation, in addition to raising their economic and social standing (Moosavi, Borouamand, & Tabatabaei Yazdi, 2025).

Little decisions taken throughout daily life, saving water, choosing sustainable transportation, and switching to renewable energy sources, add up to a big impact. For example, recycling saves energy and resources needed to produce new materials. Similar to this, conserving energy by switching to energy-efficient appliances or shutting off lights and electronics when not in use helps to lower carbon emissions and ease the burden on natural resources.

Energy Saving Management

Participants discussed their domestic management practices regarding environmental protection and degradation. Both generations contributed to the conversation about household practices that support environmental sustainability. A 54-year-old housewife shared her experience with traditional agricultural practices that prioritize environmental care. Having spent decades managing her household and garden, she recalled how older generations relied entirely on natural methods to grow their food. She stated, "Historically, we relied on local fertilizers instead of chemical ones to cultivate vegetable plants and herbs in our garden, thereby promoting healthy plantation and safeguarding them from harmful pesticides". A fellow college student noted, "In the daytime, I open the windows to let in sunlight, and I employ sun-drying methods to conserve vegetables and fruits for the winter months."

Individuals involved in the study reported a variety of energy-saving habits at home, including switching off lights and unplugging appliances when they are not being used. Nonetheless, some elder participants pointed out that their limited awareness and resources have led to practices that harm the environment. Additionally, younger generations remarked that at times, their actions inadvertently contribute to environmental harm. A grandmother mentioned, "We use traditional wood stoves in our village. We gather firewood from the jungles and use it for cooking and heating. Smoke released from the stoves contaminates the air, threatening both human health and the environment".

The researcher observed that the majority of participants are increasingly aware of the

importance of environmental protection. As a result, they tend to conserve energy by utilizing locally sourced products, taking advantage of natural light during the day instead of relying on electricity, and employing traditional methods for food preservation. The researcher additionally observed that when individuals prioritize their comfort and necessities, a shortage of resources can lead to significant environmental impacts. People often opt for methods that provide immediate convenience, neglecting the long-term effects on the environment, which ultimately contribute to its degradation. This trend underscores the need for a shift in perspective, encouraging a balance between personal convenience and sustainable practices that consider the health of the ecosystem.

Sustainable Food Management

Participants highlighted their efforts to support sustainable food practices. The younger generations claimed that they had new methods for preserving food because of technological developments, while elderly people said that they had traditional expertise for doing so.

One of the housewives mentioned, "We used conventional methods for food storage, including constructing a space underground (Guv). This preserves food's natural flavor. And rather than throwing away food, we use it for a long time. We share resources and food because we work closely together". Another woman mentioned, "I like to use organic products. We cultivate our own fruits and vegetables and rely less on store-bought items. We feed the scraps to animals since they also provide us with energy.

The majority of participants indicated that traditional practices help them maintain food sources and cultivate their herbs and crops. They also expressed a preference for organic products and a tendency to avoid purchasing items from the market. Some participants noted that time limitations and the need to balance professional and household duties constrain their ability to work in agriculture or grow vegetables.

The researcher found that women who adopt environmentally friendly food habits play a vital role in preserving the environment through activities like home gardening, preserving foods such as tomatoes, leafy greens, and dried fruits for winter, and cooking with locally sourced ingredients. These practices not only support

ecological balance but also help sustain cultural traditions. Conversely, time constraints and busy schedules can lead to unintentional, environmentally harmful behaviors. For example, relying on convenience foods due to demanding work hours results in increased packaging waste.

Household Waste Management

When asked about how they handle domestic waste, including food scraps and clothing, almost all participants from both age groups indicated that they consistently make an effort to manage waste properly. The older generation noted that their limited resources led them to share these resources. Women play an active role in managing household waste, often doing so without compensation, while men tend to work with waste management organizations for pay. Women bear the responsibility of overseeing waste disposal in households. The way waste is managed in each home significantly affects environmental sustainability. Today, there are numerous methods available for waste disposal.

A participant from the older generation, a 48-year-old tailor from Shimshal, discussed how she integrates sustainable methods into her daily routine through her tailoring abilities. Utilizing her creativity and resourcefulness, she highlighted that repurposing materials is not only cost-effective but also beneficial for the environment. "I repurpose extra garments for various uses; I create cushion covers from leftover fabric and turn them into Reusable shopping bags. Additionally, I made blankets from used clothes for winter and sewn curtains for our home". Another person mentioned, "I used to take handbags with me for groceries, as I told you, I am a tailor. So, I sew bags to reduce the use of plastic bags. I keep shopping bags with me while going shopping and buy environmentally friendly products and encourage others to do the same".

The results align with prior research, indicating that in rural cultures, women are tasked with cleaning and managing household duties. Their primary responsibility is to manage household waste and maintain a clean home. However, several women expressed that their lack of education leaves them without proper methods for waste decomposition, leading them to burn household waste instead. This practice not only contributes to air pollution but also poses significant risks to

human health and the environment. Although females are more sensitive towards the environment, some practices lead to environmental degradation.

One of the participants stated, “Because I lack awareness and resources, I have no awareness of new waste management methods. Consequently, I still dispose of my household waste using the conventional method, that is, by burning it all at once. I do not consider the long-term effects of this practice”.

Women actively work to manage household waste. They manage waste materials without receiving any compensation, whereas men frequently collaborate with waste management companies and earn a salary. Women are responsible for dealing with household waste, which has a direct effect on environmental sustainability (Lee et al., 2024). The researcher noted that women are crucial in managing household waste and safeguarding the environment by reusing, repurposing, and properly disposing of single-use plastics. Their deep sense of environmental responsibility and dedication to sustainable living drives them to effectively handle household waste and promote environmental well-being. However, certain factors impede individuals from consistently engaging in eco-friendly practices. These include a lack of resources, limited availability of waste management facilities, and inadequate knowledge of contemporary waste management techniques, which result in environmentally damaging behaviors.

Water Resource Management

Women emphasize their roles in water management through numerous household tasks. They mentioned that they manage water based on their requirements and take responsibility for collecting, storing, and overseeing water use within the home. At the family level, women are in charge of utilizing water for cooking, cleaning, and other domestic purposes.

A participant mentioned, “I remember gathering water from rivers and transporting it over long distances. We clean our dishes with ash and sand, and then we use the leftover water for watering plants or cleaning outdoor spaces”. Another participant said, “I utilize a small quantity of water when cooking at home. I consistently inspect the tape for any leaks. I keep water in a

container and educate my family about the significance of saving water to safeguard the environment”.

Women make significant contributions to water management efforts. Participants expressed increased awareness and concern regarding water management practices. They take measures to conserve water, such as collecting it in containers and utilizing surplus water for watering plants or cleaning tasks. Additionally, some respondents noted that their actions also contribute to the generation of wastewater.

A previous study stated that the involvement of women over time holds significant importance. This positions them as the main users and managers of water through their domestic practices, agricultural activities, and their hands-on experiences that link them to resource management methods (Barouki et al., 2021). Thus, Studies show that most women are aware of their behaviors concerning environmental conservation. They frequently take charge of overseeing water usage and environmental protection in their households. Typically, they handle tasks such as collecting and conserving water. Their involvement includes activities like gardening and storage, which positively impact the environment. Conversely, certain domestic practices can lead to environmental harm. For instance, using non-biodegradable cleaning products, improper waste disposal, or wasting large amounts of water can negatively affect the environment.

Kitchen Gardening and Farming Management

In countryside regions, a majority of individuals rely on farming. Women collaborate in the fields to harvest crops. Farming serves as their primary source of income. They rely on agriculture to cultivate their produce. The practice of agriculture is widespread among the community, contributing to environmental sustainability (Ahmad 2018). “My grandmother used to cultivate vegetables in our garden, and we still do the same, according to one participant. We still use herbal remedies at home because she also likes them. Each summer, we cultivate new plants”.

Farming practices are handed down from one generation to the next. Participants shared that their grandparents employed similar methods and techniques, utilizing traditional approaches to cultivate vegetables that they learned from their

ancestors. They take their children to the fields to instill in them the importance of land and growing crops, fostering an appreciation for these practices and encouraging a sense of responsibility towards environmental sustainability. Involving the younger generation in these activities ensures that these traditions endure and continue to thrive.

Role of Women as Environmental Stewards

The Role in Community-based organizations

Women's essential position as environmental managers highlights their invaluable contributions to the development of families and communities, where they dedicate their time, effort, expertise, and unique perspectives. Women share environmental knowledge by drawing on their vast experience (Shinde, 2024). As a result, their environmental consciousness and community action help them in their natural ability to provide an excellent basis for environmentally conscious behavior and sustainable community development (Warren, 1994). Women stated that they actively support sustainability through community-based organizations. They claimed that in addition to taking part in domestic tasks, they also interact with organizations and make a contribution to sustainability.

One of the participants, a dedicated member of the local community associated with the Aga Khan Rural Support Program (AKRSP), discussed her participation in organized environmental initiatives. She highlighted how the program supports their efforts by offering educational workshops and providing essential items, such as masks and bags, to promote health and protect the environment. "My affiliation is with the Aga Khan Rural Support Program (AKRSP). In addition to providing us with masks and bags to help us protect the environment and ourselves, the organization hosts educational seminars. To keep our communities clean, our team gathers once a week".

Women's contributions to community development are becoming more and more important. They may assist in overcoming centuries-old inequalities, reducing gender gaps, and advancing the community as a whole. The researcher found that women are actively engaged in local organizations. Numerous community-based organizations are addressing environmental concerns and conservation efforts. The researcher highlighted that the Aga Khan Development Network (AKDN) significantly contributes to the

development of community members in the Hunza Valley. This organization offers practical workshops and sessions aimed at improving both personal and community development. As a result, women tend to be more involved in organizational activities. The perspectives of the participants are consistent with existing literature, which indicates that women in organizations are often more hands-on than men because of their collaborative roles in juggling various tasks. Their involvement is crucial in promoting sustainable practices.

The Role in Awareness Campaigns

The participants highlighted their essential role in educating a variety of individuals, including family members and community residents. Through their diverse activities and everyday behaviors, women significantly contribute to enhancing community awareness regarding environmental sustainability. Many of them facilitate and conduct workshops, awareness initiatives, and community clean-up events to highlight the importance of conserving natural resources. Some also leverage social media, community events, and educational institutions as venues for disseminating information. Furthermore, some take on leadership roles in organizations like the Girl Guides Association, which provides workshops and sessions designed to engage communities.

An enthusiastic young woman involved in community work expressed, "I consistently engage in community events. I've participated in clean-up events and motivated others to join various community initiatives, helping them cultivate a sense of responsibility toward protecting the environment". A participant stated, "I am a member of the Girl Guides Association. I always encourage my community members to protect the environment. I organized a workshop related to environmental protection to spread awareness about combating climate change".

Previous research has indicated that women serve as role models in their engagement with sustainability by implementing eco-friendly practices in their households and actively advocating for environmental stewardship. The researcher observed that in rural communities, women not only participate in home-related tasks but also play a role in environmental conservation. Additionally, they act as activists within their communities. Many participants reported that they

consistently take part in community events, such as clean-up initiatives and tree-planting activities, to engage others in their efforts. They utilize social media platforms to disseminate information and raise awareness by posting about these initiatives. Today, women are leading the charge for change; their efforts are vital to achieving sustainability.

The Role as Volunteerism

Women activists play a crucial role in leading movements and making significant contributions to sustainability. The research suggests a strong connection between women and environmental issues. Consequently, women are often recognized for their stewardship of resources and their dedication to environmental conservation. The respondents highlighted their consistent involvement in community programs and their commitment to enhancing their communities. One of the Participants mentioned, "I actively engage in community events as a social worker. Recently, I took part in the Shimshal Nature Trust's community event, and we planted 10,000 trees in our neighborhood".

The researcher observed that women regularly volunteer their time to sustainability-related initiatives. Women seem to be active in projects that improve the welfare of the community. They took part in a number of neighborhood initiatives to conserve the environment. Together, they clean up their environment in an effort to promote sustainability.

The Transmission of Green Knowledge Across Generations

Elder Generation as Stewards of Green Knowledge

Women and men participate primarily in environmental management, which allows them to see the environment more closely and develop a thorough awareness of natural environmental problems and their effects on the well-being of individuals and communities (Caissie & Halpenny, 2003). For climate resilience and sustainable environmental practices, environmental leadership and knowledge must be passed down through the generations (Yadav, 2025). So, many elders have expressed that they bear a significant responsibility to educate the younger generation. They noted that during family meals, discussions often revolve around resource management and environmental conservation. As a result, their children learn valuable lessons from these conversations. They

make a conscious effort to turn off lights and close water taps when not in use, and they emphasize the importance of sharing resources with others. One participant, a 22-year-old university student passionate about sustainable living, shared her personal experiences related to environmental practices grounded in her family traditions. "My grandmother and I used to spend our summer vacations together. She taught me about agriculture, and I would help her in the fields. Now, I apply those same eco-friendly techniques to grow herbs and vegetables myself".

A 19-year-old college student, who is actively engaged in environmental awareness initiatives, shared how her mother's influence has shaped her recycling practices and motivated her to creatively repurpose waste through personal projects. "My mother always encouraged us to recycle and find new uses for items instead of discarding them. Her guidance helped me cultivate a creative approach to waste management. I now focus on projects that transform what would be considered garbage into valuable materials".

According to the researcher, older women play a vital role in transferring environmental knowledge and practices from one generation to the next. Through storytelling, direct instruction, and providing an example, their kids and descendants acquire sustainable practices and a profound regard for the environment. These women's creative lifestyles, useful conservation methods, and traditional knowledge not only preserve important environmental practices but also encourage sustainable living and a culture of environmental responsibility.

Younger Generation as Stewards of Green Knowledge

Elders have passed on environmental knowledge and practices to future generations. However, recent research has demonstrated that younger generations also pass on practices and knowledge to older generations. Knowledge has value when it comes to sustainability. Social media is one source of it. As the majority of social media users are young generations (Pabian & Pabian, 2023).

One of the college participants mentioned, "Throughout various projects, I expanded my knowledge about the benefits of recycling. I started this habit at home, encouraging my family to

compost organic waste and recycle objects rather than throwing them away". Another participant said, "I have installed dustbins in my community and taught others about how climate change affects our lives, stressing the significance of using dustbins to protect our environment".

New technology, such as renewable energy sources and energy-efficient appliances, is encouraged to be adopted by family members by younger generations. Children greatly impact their parents' behavior at home by encouraging sustainable consumption patterns and energy conservation (Husamah, Rahardjanto, Permana, & Lestari, 2025). Furthermore, youth are actively involved on social media sites, where they interact with the public and raise awareness. They also assume the responsibility of teaching environmental sustainability to their seniors (Fisher 2013).

The researcher states that the younger generation is essential in transmitting environmental behaviors and information. They engage with educational institutions and utilize social media platforms to spread awareness. As a result, they are more informed about pressing environmental issues and contemporary solutions to address climate change. This generation tends to be more proactive, inspiring their families and community members to adopt eco-friendly practices. The combination of contemporary methods and conventional wisdom proves to be increasingly effective in promoting environmental sustainability.

Women are essential to environmental protection and sustainability because of their innate connection to nature, traditional wisdom, and community involvement. To achieve effective environmental management, it is essential to ensure equal participation of women in decision-making processes and to empower them. By acknowledging and valuing women's contributions, we can develop more comprehensive and effective environmental safety plans that assist both the community and the environment as a whole. This research focuses on exploring the role of women in environmental protection. By highlighting their contributions, we can better understand the significance of women's efforts in environmental conservation. Rural women, in particular, possess important knowledge about environmental safety and degradation, gained from their daily activities and interface with the environment (Bravo 2010). Women play a crucial

role in each household in ensuring food availability and preventing shortages. Additionally, the study found that Indigenous food preservation knowledge and practices support households' sustainable food consumption (Kalansooriya and Chandrakumara 2014). Women take an active role in measuring and disposing of domestic waste, and they dispose of waste materials without getting rewarded. On the other side, men are rewarded for this work. Every household waste directly impacts environmental sustainability. Media platforms play a significant role in raising awareness (S. Khan, Afridi, Alam, & Khan, 2024).

The findings revealed that both older and younger women possess significant awareness and knowledge regarding environmental protection. However, older women have limited knowledge and awareness, although their traditional practices greatly contribute to environmental conservation. Despite their contributions, some of their practices may also have negative effects on the environment due to this lack of awareness. In contrast, younger women are knowledgeable about environmental protection and energetically participate in various environmental activities. However, the influence of industrialization has led to a reliance on technology, which in turn contributes to environmental pollution. The research indicates that both generations play a substantial role in environmental conservation through their everyday practices. Older women utilize old methods and indigenous knowledge to protect energy and manage resources effectively. Meanwhile, younger women are more conscious of environmental issues and the impact of their actions. They have access to extensive information about climate change and are knowledgeable about the consequences of their practices. As a result, they adopt eco-friendly habits and engage actively in environmental initiatives. Women hold a vital role in their households and are also crucial change-makers within their communities. Notably, women activists have received prestigious awards, such as the Nobel Prize, for their significant contributions to environmental conservation in their communities (Kakade et al., 2024).

Women tend to have a stronger connection to the environment, actively engaging in various sectors and encouraging their neighbors and families to prioritize environmental care. Today,

women are significant change-makers in this regard. The elderly population plays a crucial role in transferring knowledge to younger family members. This exchange takes place via direct teaching, narratives, and collective tasks. Grandparents and parents serve as unstructured instructors, imparting their environmental values and practices to their grandchildren, particularly during outdoor experiences (Chawla, Soreng, & Kumar, 2024).

They took part in community events to promote sustainability, such as clean-up days and tree planting, to engage others in their campaigns. Additionally, women play a crucial role in transmitting knowledge and practices related to the environment. The sharing of environmental knowledge is a reciprocal process, in which younger generations gain insights from older individuals, while those elders also acquire knowledge from the youth. This continuous cycle of learning fosters environmental sustainability.

CONCLUSION

The study concluded that women play a critical role in environmental protection and sustainability due to their traditional knowledge, community involvement, and natural connection to the environment. Green families play a vital role in environmental protection. Promoting ecological values, passing on environmental knowledge to future generations, and incorporating sustainable practices into their daily lives all contribute significantly to environmental protection. Being the heads of the households, women are important representatives of environmental stewardship. Their strong commitment to climate action and sustainability is demonstrated by their leadership in educating both children and elders and guiding household behaviors. The study also emphasizes how families make decisions and take actions to reduce environmental degradation. Their strategy helps in the negative effects of human activity on the environment, whether it is through resource reuse, pollution reduction, or biodiversity conservation.

Green families are essentially a hopeful route to a more environmentally friendly future, led primarily by women's stewardship. Their expertise, emphasis on environmental preservation, attempts to improve sustainability, and efforts to lessen degradation demonstrate that effective climate

action frequently starts at home. To build resilient communities and a healthier planet, it is imperative to support and strengthen this family-based initiative. However, highlighting the role of women in environmental protection helps to improve climate action and build a stronger and sustainable future. Empowering women in this way not only recognizes their contributions but also strengthens their role in protecting the environment.

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