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Knowledge of rural women regarding solar home lighting system

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Abstract

There are total twenty panchayat samities in Udaipur district of Rajasthan, out of which sixteen are tribal and four are rural. Out of four rural panchayat samiti one panchayat samiti *i.e* Badgown was selected purposively as All India Coordinated Research Project on Women in Agriculture has work in the five villages of this panchayat samiti. The total sample of study consisting 100 farm women (20 beneficiaries from each village) who were beneficiaries of solar home lighting system. Interview technique was used to collect information from the respondents according to the training provided to the farm women. Results revealed that 61 percent of the respondents had good level of knowledge about solar home lighting system and its relative aspects, followed by 34 percent of the respondents had average level of knowledge about solar home lighting system and 5 percent of the respondents had poor level of knowledge.

Keywords: Rural women, solar home, lighting system

Introduction

Energy is essential in facilitating daily activities and is considered a primary need in modern life (Baig *et al.* 2022; Ren *et al.* 2021) ^[2, 5]. The increasing energy needs require adopting and promoting energy sources that can meet the extensive energy requirements and save energy for future generations (Ali *et al.* 2021) ^[1]. Recent years have seen a significant uptake of renewable energy technology, mostly as a result of the need to increase energy access, security, and climate change mitigation. The development of the renewable energy sector is currently being studied as a means by many nations to promote social and economic growth. Renewable energy is derived from natural resources that regenerate more quickly than they are depleted.

The need for renewable energy arises from worries about energy security, a broad topic that covers concerns about the dependability and affordability of domestic sources of supply, which are raised by rising energy prices and increased energy demand, as well as other factors like the release of carbon dioxide from burning fossil fuels, which also pollutes the environment and raises the average global temperature. Numerous negative effects on human health are also caused by burning fossil fuels and other common fuels. The cleanest and most practical solution to stop environmental degradation is to use renewable resources as a source of energy because they don't emit greenhouse gases while being produced. Solar home lighting system (SHLS) is an ideal way to use the energy of the sun to enlighten the home and operate a few small appliances. A cost-effective, portable, and readily mountable home lighting system may meet all of the small energy requirements. When needed, the solar energy produced by a home lighting system can be stored in the solar battery and used for lighting.

The use of solar energy, which is cost-free and clean, to brighten homes and streets in rural regions is the ideal option. These solar lighting systems are nothing less than a boon for areas without access to electricity. People who live in these areas can use a solar home lighting system to illuminate their homes, charge batteries and mobile phones, watch TV, and listen to the radio. An eco-friendly option to reduce electricity bills in metropolitan areas is using a solar lighting system. The dependence on the electric grid can be lessened because it can power some of the home's appliances. Knowledge is the most important component of the behaviour. It is assumed that if an individual has adequate knowledge, then may think of adopting that particular technology. Under AICRP-WIA intensive efforts have been made to promote various technologies among the farm women so that they can be made aware about the improved practices that could increase their work efficiency, reduce drudgery and improve their health and nutritional status.

Therefore, in the present study, an effort was made to determine the farm women’s knowledge or understanding regarding solar home lighting system.

Methodology

There are total twenty panchayat samities in Udaipur district of Rajasthan, out of which sixteen are tribal and four are rural. Out of four rural panchayat samiti one panchayat samiti i.e Badgown was selected purposively as All India Coordinated Research Project on Women in Agriculture has work in the five villages of this panchayat samiti. From the selected panchayat samiti, all five Nutri – Smart villages i.e. Madar, Thoor, Loyra, Brahmano ki hunder and Pherniyon ka guda adopted by AICRP-WIA were selected purposively. Purposive sampling technique was used for the selection of samples. For selection of sample a list of beneficiaries of Solar Home Lighting System (SHLS) is procured from AICRP-WIA, MPUAT. From the list all beneficiaries were included in the sample of study. Thus, the total sample of study consisting 100 farm women (20 beneficiaries from each village). Interview technique was used to collect information from the respondents according to the training provided to the farm women.

Results and Discussion

Knowledge is the most important component of the behaviour. It is assumed that if an individual has adequate knowledge, then may think of adopting that particular technology. In the present study, an effort was made to determine the farm women’s knowledge or understanding regarding solar home lighting system and its related aspects which shown in Table 1 to 5.

Table 1: Knowledge of the respondents regarding renewable energy n=100

S. No.	Statements	f/%
1.	Renewable energy	40
2.	Sources of renewable energy	
	• Solar energy	45
	• Wind energy	25
	• Biomass energy	10
	• Geothermal energy	0
	• Hydropower energy	15
3.	Importance of using renewable energy	
	• Environment friendly	20
	• Fix source of energy	14
	• Helpful in generating employment	10
	• Improving public health	15
4.	Benefits of using renewable energy resources	
	• Less carbon emission	14
	• Reduces harmful air pollutants	5
	• Less water usage	20
	• Helpful in economic development	18
	• Always available	15

Perusal of Table 1 reveals that 40 percent of the respondents had knowledge about renewable energy, while 45 percent of the respondents were only able to talk about solar energy as a source of renewable energy followed by 25 and 15 percent of the respondents had knowledge about wind energy and hydropower as source of renewable energy and only 10 percent are familiar with the biomass energy. The respondents

easily remember about solar energy because of the technology they were using. About 20 percent of respondents knew that renewable energy is environment friendly, 14 percent of respondents knows that it’s a fix source of energy or 10 percent knows that it is helpful in generating employment while 15 percent were knew that renewable energy improving public health. Among the all-benefits 20 percent of the respondents possessed knowledge about less water usage as benefit of using renewable energy, while 18 percent of the respondents consider it helpful in economic development followed by 15 and 14 percent had knew about the benefits like always available and emit less carbon while only 5 percent are aware about that it reduces harmful air pollutants. Because most farm women were uneducated and unaware of renewable energy, there is a low level of awareness. Because of the prior lecture delivered at the time of training before distributing solar home lighting systems, it was expected that the respondents would have knowledge of renewable energy, but because the lecture wasn't given often, they didn't remember the details. According to Rafque *et al.* (2020) [3] 60.3 percent of respondents are aware of their solar systems and their maintenance, but 76% are aware of nonfunctional solar systems in Nigeria.

Table 2: Knowledge of the respondents regarding solar technology n=100

S. No	Statement	f/%
1.	Solar energy	65
2.	Importance of using solar energy	
	• Clean and green energy	30
	• Doesn't depend on other sources of energy	15
	• Less power consumption	25
	• Safer than others in terms of accidents	20
3.	Use of solar energy in agriculture	50
4.	Different types of solar energy technologies	
	• Solar panel	15
	• Solar cooker	40
	• Solar water heater	5
	• Solar water pump	0
	• Solar street light	20
5.	Storing solar energy for later use	60
6.	Use of solar energy at night	35
7.	Way to use solar energy at night	20

With respect to knowledge of the respondents regarding solar technology, Table 2 divulges that 65 percent of the respondents had knowledge about solar energy. Regarding the importance of using solar energy, about 30 percent of the respondents consider it as clean and green energy, while 15 percent of the respondents consider it as that it doesn't depend on other sources of energy, 25 percent consider it as that it consume less power, 20 percent consider it as a safer than other in terms of accidents. Nearly half of the respondents (50%) possessed knowledge about solar energy can be used in agriculture. Less than half of the respondents were able to name solar cooker (40%), solar street light (20%), solar panel (15%) and solar water heater (5%). Among all the respondents 60 percent of the respondents knew that solar energy can be store for later use, 35 percent of respondents had knowledge about use of solar energy at night. Only 20 percent of the respondents knew the ways of using solar at night.

Table 3: Knowledge of the respondents regarding solar home lighting system n=100

S. No	Statement	f/%
1.	Definition of solar home lighting system	85
2.	Principle of solar home lighting system	70
3.	Devices in solar home lighting system	57
4.	No. of bulbs in solar home lighting system	61
5.	No. of portable casing units/batteries in solar home lighting system	64
6.	No. of panel in solar home lighting system	75
7.	Watt of panel used in solar home lighting system	0
Benefits of using solar home lighting system		
8.	• Easy to use	77
	• Save time	60
	• Save money	40
9.	Year of warranty	5
10.	Approx. weight of solar home lighting system	2
11.	Storage of excessive energy/heat to use at night	55

Table 3 unfolds that 85 percent of the respondents were able to define the solar home lighting system, while 75 percent knew about no. of panels in solar home lighting system and 70 percent of the respondents were able to explain about the principles of solar home lighting system. The respondents possessed knowledge about different types of benefits of using solar home lighting system, among all the benefits 77 percent of the respondents feels that it is easy to use in nature, while 60 and 40 percent of the respondents knows that solar home lighting system save time and money. About 64 percent of the respondents possessing knowledge about the number of unit/batteries in the solar home lighting system and 61 percent of the respondents knew the number of bulbs in the solar home lighting system.

Regarding devices in solar home lighting system 57 percent of the respondents knew about different devices used in solar

home lighting system i.e. central casing box in the system, bulbs and button, length of the cable, on/off switch in the system, mobile charging port and a two pin charging cable in the system. More than half of the respondents (55%) possessed knowledge about that storage of excessive energy/heat to use at night in the battery or unit. Only 5 percent of respondents possessed knowledge regarding 1 year of warranty of the system. Respondents having very low level of knowledge regarding approx. 2 kg weight of the whole solar home lighting system. The respondents possessed good level of knowledge about the solar home lighting system due to the training conducted before the distribution of solar home lighting system but they were lacking in knowledge regarding the parts and their basic concepts of solar home lighting system as they did not find it relevant to know for adoption.

Table 4: Knowledge of the respondents regarding operations of solar home lighting system n=100

S. No.	Statement	f/%
1.	Charging of solar home lighting system	78
2.	Light source from the battery to the room	75
4.	Procedure of cleaning the panel	60
5.	Connect battery to bulb	76
6.	Charging hours of single batteries	71
7.	Charging hours of both batteries	60
8.	Battery capacity after a single charge	70
9.	Longest time a single bulb can last	64
10.	Hours both the bulb work together	55
11.	No. of light in the battery	70
12.	Types of light contains battery	70
13.	Focus or flood light work together	67
14.	Electricity charges the battery	55

Table 4 reveals the level of operational knowledge of solar home lighting system. Majority of the respondents (78%) possessed knowledge about the charging of solar home lighting system by connecting the battery to the panel and keeping the panel under direct sunlight, three – fourth of the respondents (76%) knows the procedure of connecting the battery to the bulb with the help of the cable or wire given in a system and 75 percent of the respondents knew the light source from the battery to the room by putting the battery at once place, connecting it to the wire, bringing the wire to the room, lighting the bulb. About 70- 71 percent of the respondents had knowledge about the Battery capacity after a single charge up to 12 hours, no. of light in the battery, types of light contains battery and charging time of the single battery about 4 to 5 hours in a proper sunlight.

Table 4 further shows that about 67 percent of the respondents had a knowledge about that both the lights focus and flood light work together, 64 percent of the respondents had a knowledge about the longest time a single bulb can last is about 10 hours and 60 percent knew the procedure of cleaning the panel and Charging hours of both batteries. More than half of the respondents (55%) had knowledge about the working hours of both the bulb together is about 8 hours because they are not using both the bulbs together and also, they can't remember the prior information given at a time of distribution that they can use both bulbs together. Similar respondents (55%) possessed knowledge about charge the battery with the electricity. Respondents having average level of knowledge about the operations of the solar home lighting system because most of the respondents are illiterate and are unable

to remember the specifications of the system.

Table 5: Overall knowledge of the respondent's regarding solar home lighting system

S. No.	Categories	f/%
1.	Poor	5
2.	Average	34
3.	Good	61

The Table 5 reveals that 61 percent of the respondents had good level of knowledge about solar home lighting system and its relative aspects, followed by 34 percent of the respondents had average level of knowledge about solar home lighting system and 5 percent of the respondents had poor level of knowledge. During the investigation it was found that the respondents had average to high level of knowledge about the specific solar home lighting system. The findings of the study were supported by similarly study of Raghuwanshi (2019) ^[4] found that most of the respondents (70.83%) had medium level of knowledge about solar pump followed by 15.83 and 13.34 percent of the respondents had high and low level of knowledge about the solar pump system.

References

1. Ali S, Rashid H, Khan MA. The role of small and medium enterprises and poverty in Pakistan: an empirical analysis. *Theor Appl Econ.* 2014;18:67-80.
2. Baig IA, Irfan M, Salam MA, Işık C. Addressing the effect of meteorological factors and agricultural subsidy on agricultural productivity in India: A roadmap toward environmental sustainability. *Environ Sci Pollut Res*, 2022, 1-18. <https://doi.org/10.1007/s11356-022-23210-6>
3. Rafque MM, Rehman S, Alhems LM. Assessment of solar energy potential and its deployment for cleaner production in Pakistan. *J Mech Sci Technol.* 2020;34:3437-3443. <https://doi.org/10.1007/s12206-020-0736-9>
4. Raghuwanshi N, Yadav JP, Ghosly AK, Kumar V, Bijarnia SR. Knowledge of Solar Energy Technology by the Farmers of Jaipur District in Rajasthan, India. *Int. J. Curr. Microbiol. App. Sci.* 2020;9(3):660-663.
5. Ren S, Hao Y, Wu H. Government corruption, market segmentation and renewable energy technology innovation: evidence from China. *J Environ Manage.* 2021;300:113686. <https://doi.org/10.1016/j.jenvman.2021.113686>